



RHSC + DCN – Little France Progress October 2017



## Executive Summary

|                    | Progress  | Blockage   | Clarification  | Next   |
|--------------------|---|--|--|--|
| <b>Time</b><br>    | <p>SA6a signed (rights to undertake works outside boundary).<br/>NHSL Board unanimous approval to proceed to DRP, if necessary, on HV and Vent compliance issues.</p> | <p>Completion not achieved on 12<sup>th</sup> October, 2017.<br/>IHSL to advise new actual completion date.</p>  | <p>Independent Expert Reports on DRP issues (HV and Ventilation) issued to IHSL + Ind Tester.<br/>Ind Tester view on whether completion is dependent on implementation of DRP issues.</p>  | <p>Proceed to DRP if no alternative agreed.<br/><br/>NHSL seeking direct contract with MPX to undertake boundary works</p> |
| <b>Cost</b><br>    |   |  |  |  |
| <b>Quality</b><br> |   | <p>Room Reviews -quality remains variable. Witness + Testing sporadic.<br/>No progress with SA1 with IHSL</p> <p>H+S issues (vehicle / pedestrian segregation) remain at RIE – NHSL and Consort in dialogue.</p> | <p>Growing lists of:</p> <ul style="list-style-type: none"> <li>1 Potential PCo Changes</li> <li>2 Potential major compliance issues.</li> <li>3 Design Compromises</li> </ul> <p>Slow progress by IHSL on completion paperwork for Ind Tester – PCo Changes, Completion Criteria etc.</p> | <p>SFT highlighted areas and themes of Quality Control from Cole Report and Grenfell. Paper attached.</p>                  |

## Design

- Intensive discussions are taking place with IHSL, Multiplex and NHSL in relation to a small number of significant design issues (HV and Ventilation) that remain.
- A revised programme for Room Reviews was issued on 11<sup>th</sup> September; this shows room reviews being undertaken up to the 24<sup>th</sup> November. On average 140 rooms a week will be reviewed from now until the 24<sup>th</sup> November. The programme does not take account of need to review areas again due to the number of observations that were required to be addressed. Since last Programme Board only a small number of reviews have taken place as areas that were programmed to be reviewed were not ready. The Room Review programme will become more resource intensive for the Project Team over the coming months.
- As the Project's Review Team/s have found that the standard of the work has been variable when undertaking room reviews, Multiplex have provided 5 Exemplar rooms which the Project Team jointly reviewed with Multiplex last month to agree the standard of work that is acceptable.
- Ronald McDonald House Charities were involved in the review of the Family Hotel earlier this month.
- TCT undertook a site visit recently and identified some design issues which are being taken forward. Another visit will be organised in the near future
- A further design meeting has been held with ECHC regarding the fit out of the shop and a Change Request submitted to IHSL for the required works
- A fair amount of RDD information is continuing to be submitted for review.
- There are still a small number of design workshops required to be held to conclude a number of workstreams, e.g. key suiting for all internal and external doors.

## Programme

- Anticipated actual completion date is unknown.
- No communication from IHSL on this critical issue.

**RIE Health, Safety & Logistics**

**Health & Safety**

- Pedestrian safety remains a concern with long standing issues still to be resolved in key business areas. Risk of incident remains very high.
- Good pro-activity between contractors on campus at SWH&S meetings with low numbers of incidents being reported to the group.
- Access to with Service Yard B has control element on vehicle and pedestrian access. Continues to working well.
- Hospital Square works have progressed fairly well. Good work on H&S aspects by Multiplex and Crummock.
- Real concerns on pending flood gate works on “blue light” route to ED. Start scheduled for 18<sup>th</sup> September for 12 weeks. CEC involved!
- Concerns remain on the temporary crossing for new access to RHCYP for construction team. High volumes of people on crossing, sight lines are not good, awareness signage has been installed and additional management by Multiplex on the crossing is in place. Blue light traffic could be delayed to PCI if this is not better managed on a daily basis!

**Logistics**

- Large vehicle numbers on site remains high but are usually well managed. There have been new concerns about “fly / unmanaged” deliveries for Multiplex since the closure of Gates 1 and 2. Random dropping off in different parts of the campus has bee witnessed by suppliers.
- Gate 4a activities still going well since gate switch with no reported issues to date on PCI blue light route or bus services.
- Contractor Traffic Management Plans generally working well respecting blue light routes and NHSL core requirements.
- Positive initiatives in place from Multiplex on the management of large delivery vehicles!
- Hospital Square works are causing a few issues with vehicle management in the PCI / Day Case area. QMRI Bus Stop closed for safety reasons. Taxi Rank returned to outside of Anne Rowling and is being monitored closely on a daily basis. Taxi associations have been asked again not to “Over rank”. It does lead to Blue Light concerns to PCI.
- Concerns about perimeter road construction and surface break up. Enabling works defects are underway with BBKSUK carrying out remedial works in numerous areas on the perimeter road. We are awaiting a programme for the Bus Hub major remedial works from Consort and we have concerns already from Lothian Buses.
- BBKSUK have started work on BioQuarter for U of E area that does have traffic implications to the RIE campus. (South Junction in particular) Close monitoring in place.
- North Junction lane closure to accommodate footpath and kerb remedial works by Multiplex from 11<sup>th</sup> September for 2 week period. All stakeholders have been advised with daily monitoring in place.

**RIE Clinical Enabling**

**Pharmacy (Aseptic Suites, Store and Reception Areas)**

- The pharmacy clinical enabling work has been completed.

**Medical Photography**

- This project will be completed before end of December 2017



**RHSC & DCN – LITTLE FRANCE  
PROGRAMME BOARD – 06/10/17**

**Construction Quality Assurance**

**Recommendation/ action required:**

The Programme Board is asked to note the measures in place within the project to address specific construction quality control issues set out as recommendations in the Cole Report and following the Grenfell Tower disaster.

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## **Construction Quality Assurance**

### **1 Purpose of the Report**

The purpose of this report is to provide information to the Programme Board to consider construction quality assurance to the extent that it has not been covered in Programme Board papers and minutes provided to date.

Any member wishing additional information should contact the Executive Lead in advance of the meeting.

### **2 Recommendations**

The Board is recommended to:

- 2.1 Note the contents of the paper.

### **3 Background**

- 3.1 SFT have highlighted to the Board some specific areas and recurrent themes in respect of quality control identified as part of the evidence and recommendations set out in the Cole Report and also following on from the Grenfell Tower disaster in order that these can be considered by the Programme Board.
- 3.2 The Board have received responses from IHSL's building contractor, Multiplex Construction Europe Ltd and FM contractor, Bouygues E&S FM UK Ltd.
- 3.3 The views of the Independent Tester, Arcadis LLP have also been incorporated along with input from the NHSL project team and technical adviser, Mott MacDonald Ltd.

### **4 Issues**

The issues raised by SFT are as follows:

#### 4.1 **What is the level of independent monitoring of construction activity?**

Arcadis commenced the review of the construction process with the piling and have sampled each element of the construction process to date. Details of the elements inspected on a monthly basis and issues identified together with the dates of the reviews are detailed in the monthly IT Report and the Key Issues Report issued by Arcadis. The methodology for undertaking the reviews together with the outcomes required are detailed in sheet 6 of the attached document (Appendix 1)

As is evident from the IT Reports and the Key Issues Reports issued by Arcadis the frequency of visits has increased as the intensity of the construction process has developed. Additionally Multiplex have independent assessments from Building control, Environmental Health, Fire services Exova for Fire, BM Trada, and trade package suppliers checks.

Bouygues have been involved as part of the design review process from inception reviewing documentation from both a maintenance and a lifecycle perspective. This has included reviews of both the design drawings and the BIM model. From the early days of the construction process Bouygues have been involved in conducting on-site inspections and have raised observations on any issues which were deemed to have a potentially detrimental impact on maintainability or lifecycle replacement, including any access issues. As part of that process Bouygues have also highlighted any matters which they perceived to be potentially non-compliant from a legislative or best practice perspective.

The Board understand that IHSL have employed a “construction expert” who visits the works unannounced and undertakes inspections. The output of these inspections are shared with the Board. However, any reports of a similar nature, if undertaken, by the Lender’s Technical Adviser are not.

In the course of their normal duties members of the Board’s Project Team, in particular secondees from Estates and Facilities visit the works regularly and report any issues of concern to both the Project Director and Director of Facilities and Estates.

Mott MacDonald, as the Board’s Technical Adviser, deploy specialist consultants as necessary to undertake design reviews and with increasing frequency site visits in respect of Room Reviews and M+E Systems.. This encompasses, but is not limited to, Geotechnical Engineering, Civil Engineering, Structural Engineering, Building Services, Acoustics, Fire Engineering, Helipad and Helicopter Design, Hard and Soft FM, Architecture and Landscaping.

The City of Edinburgh’s Building Control Dept also undertake their duties as necessary within the building warrant process.

#### 4.2 **Level of interaction of all parties with Independent Tester? Do the parties understand the Independent Tester’s processes / checks and level of confidence? In addition, are all parties clear on what “complete” means?**



Prior to the commencement of activities the IT held a workshop to explain the role, outcomes and limitation of that role to all the project stakeholders. The IT is using a progressive review process of the construction elements and is maintaining a compliance tracker schedule which details the contractual requirements for completion together with details of the evidence required to establish compliance with the requirements. This schedule is shared with the project parties. Completion will be obtained when all of these requirements are met unless any changes of requirements is notified to the IT in accordance with the Project Agreement and Schedules. The methodology for undertaking compliance reviews together with the outcomes required are detailed in sheet 3 of Appendix 1.

The IT also attends monthly Construction Progress and Completion Criteria meetings.

Multiplex/ Arcadis meetings, site reviews and design reviews are carried out as noted in Arcadis monthly reports and Key Issues reports. Compliance sign –off ongoing.

IT Role was conveyed to Multiplex at a Workshop, as stated above, when they were appointed and thereafter Multiplex Quality Manager has carried out workshops with Multiplex Managers. IT carries out a monitoring role - not 100% (100% of tests results, 50% witnessing of tests and 25% design reviews). There is a Compliance matrix which is being monitored with regular meetings.

Bouygues have engaged directly with the Independent Tester and have shared their approach to monitoring of the construction activity to ensure that the approach Bouygues were taking was aligned to the approach being taken by the Independent Tester. Acknowledgement has been received that the observations raised by Bouygues will form part of the close-out process prior to Practical Completion.

Bouygues understand the Independent Tester's processes / checks.

From a Bouygues perspective, they understand "complete" to mean that all of the observations, issues or defects raised during the construction process will have been addressed so that only minor snagging items are left to be addressed in the 10 day period post-handover.

In addition, all building services will have been tested and commissioned and all systems proven to be capable of delivering the designed output in accordance with the Environmental Matrix / Room Data Sheets by MPX. These building services will also be stress-tested to prove their resilience in the event of an unplanned outage. In addition, services such as ventilation systems will be tested by MPX for cleanliness and underground drainage will be tested for blockages using CCTV inspections. For building fabric and grounds components evidence will be provided by MPX that they have successfully passed the pre-acceptance tests set out in their respective specification documents. In addition, appropriate systems training will have been provided to Bouygues operatives by MPX to demonstrate the operation of all building services.

As part of the process to address the observations raised by Bouygues joint inspections are to be undertaken between Bouygues and Multiplex to facilitate recording of defects and monitoring of the remedial works process.

4.3 **What is the Independent Tester intending for witnessing of commissioning tests? Is there a defined process or schedule of activity?**

Arcadis are undertaking the witnessing of testing on a targeted basis. Emphasis is given to life safety (fire alarms, nurse call etc.) and clinical support systems (medical gases, IPS/UPS systems etc.) together with the dynamic systems where appropriate regulation is critical to the successful operation of the hospital (ventilation, heating and chilled water systems etc.). The tests witnessed and any issues or comments regarding the tests is scheduled and reported in the IT Reports and the Key Issues Reports issued by Arcadis. The methodology for undertaking the reviews together with the outcomes required are detailed in sheet 12 of Appendix 1. The IT has a contractual requirement to monitor 100% of tests results, 50% witnessing of tests and 25% design reviews.

A Testing & Commissioning programme has been issued by Multiplex and they await IT confirmation of all areas to be witnessed and tested.

4.4 **Has the Independent Tester witnessed quality records from significant construction stages which are covered up during the process and / or inspected samples of workmanship in these areas?**

Arcadis commenced the review of the quality management documentation with the piling and have reviewed each element of the construction process to date on a number of occasions with a close out review to establish that all outstanding issues have been rectified at the end of that process. Details of the elements reviewed on a monthly basis and issues identified together with the dates of the reviews are detailed in the IT Report and the Key Issues Report issued by Arcadis. The methodology for undertaking the reviews together with the outcomes required are detailed in sheet XX of Appendix 1. The IT through audit seeks to ensure that the project processes are adequate and will demonstrate 100% inspection by appropriate other resources.

As can be seen from the IT Reports and the Key Issues Reports issued by Arcadis the frequency of the reviews has increased as the intensity of the construction process has developed.

4.5 **What quality records are the Board to receive on completion, and in what format?**

The IT will monitor the compliance with the board's requirements using the compliance schedule including all as fitted information and O&M manuals.

All items as listed on the Completion Criteria and Compliance documentation in compliance with BCR's and Schedule Part 10 of the Project Agreement – this will

include O&M Manuals, H&S File on Zutec electronic format. Package ITP's will generate the Verifying documents. Multiplex will retain all records for 12 years.

4.6 **Is there a need to implement a process for exceptions from completion tests, and if so, how is this to be formally documented?**

The IT has flagged and is continuing to flag any issues where any changes including exceptions from completion tests will require a contractual change. Once approved in accordance with contractual requirements the changes are being incorporated into the compliance schedule.

The Board's PM Team, assisted by the Technical Adviser, also track potential Project Co Changes and possible non compliances passing the information to both Project Co and the IT.

4.7 **Is there a common understanding of the processes for completing snagging matters?**

The IT is aware of the time period allowed for within the contractual arrangements for addressing snags and will assess the nature of any outstanding works at planned completion with this as one of the relevant factors together with the change in control of the facility from MPX to Bouygues at actual completion.

Task Management on Zutec is the tool being utilized. All parties have been trained on usage during the Project.

At completion IHSL will provide a snagging list and confirm and demonstrate that all the snags can be closed within 10 days. Without this the IT would not be able to certify actual completion as they would consider there to be too many snags. The list must therefore be available to issue with the certificate of actual completion.

4.8 **Given the energy model will be used to predict energy consumption and hence cost, has it been updated / re-run with the operational reality of the building?**

The IT is awaiting the availability of the 'as installed' energy model as evidence of compliance.

The Final Draft Design Energy Model has still to be issued by IHSL.

4.9 **In terms of compliance with the Board's Construction Requirements, areas of particular interest identified from recent experience are as follows:**

- 4.91 **Brick / blockwork. In particular large panels (over one storey height and over 6m wide, brick / block double skin as opposed to SFS, and headers on single skin internal). Has the Independent Tester or the Board obtained photographic records of wall and head ties, or independent witnessing**



**before cavity closure? Where this has not been done, the Board may consider intrusive survey prior to completion.**

Arcadis have physically reviewed the installation and monitored the quality management documentation in respect of the brickwork, cavity ties, cavities and wall head restraint to demonstrate compliance with the design detail together with the final sign-off of elements from the package contractor (Lesterose) and Multiplex. This process included review photographs of areas and elements. Details of the reviews on a monthly basis and issues identified together with the dates of the reviews are detailed in the IT Report and the Key Issues Report issued by Arcadis.

Arcadis (IT) have reviewed various aspects of the brick and blockwork on site and site photographs, details and records have been satisfactorily reviewed. Photographic evidence of brickwork including cavity ties, cavities and wall head restraint and general sign off from Sub –contractor Lesterose are attached (see Appendix 2). These are the verifying records in relation to the sub-contractors Inspection & Test Plan.

**4.92 Cladding and roof connections – In particular, the validation of installation of specialist system components.**

Arcadis have physically reviewed the installation and monitored the quality management documentation in respect of the cladding, curtain walling and roof connections to Steelwork and Concrete frame to demonstrate compliance with the design detail together with the final sign-off of elements from the package contractors (Henshaw, Reglit ,Topek, Novum etc.) and Multiplex. This process included review photographs of areas and elements. Reviews are on a monthly basis and issues identified together with the dates of the reviews are detailed in the IT Report and the Key Issues Report issued by Arcadis. These reviews are sampling only by the IT and through further audit the IT would hope to verify that MPX's designers are checking and approving of materials and assemblies of components.

Photographic evidence of the various cladding types including cladding, curtain walling and roof connections to Steelwork and Concrete frame- from sub-contractors Henshaw, Reglit ,Topek, Novum etc are the verifying records in relation to their ITP's. See Appendices 3, 4 and 5.

**4.93 Ducts and dampers – has the Independent Tester witnessed testing of fire dampers in ducts;**

Arcadis are witnessing the drop testing' of fire dampers in ductwork on a sample basis and reviewing the results of all the tests that are being undertaken, which are being witnessed by Bouygues. The IT will not witness the operation of all motorised smoke/dampers but will seek evidence of cause and effect tests and BMS reports confirming the dampers are operational and integrated with the fire safety systems. Bouygues and Building Control are also witnessing the drop test

as part of their evidence gathering process to ensure compliance and issue the Building Control Certificate of Completion respectively.

Details of the tests witnessed on a monthly basis and issues identified together with the dates of the reviews are detailed in the IT Report and the Key Issues Report issued by Arcadis.

Fire dampers witnessed in Zone A and Zone B with Arcadis (IT) and Bouygues along with the Board and Board's TA in attendance.

**4.94 Fire stopping – In particular, what processes are in place to validate fire stopping, including around fire doors etc.**

Arcadis have physically reviewed the fire stopping on a sample basis and monitored the quality management documentation in respect of the partitions, doors, service penetrations etc. to demonstrate compliance with the design detail together with the final sign-off of elements from the package contractor (Astins) and Multiplex. This process included witnessing the destructive testing of sections of partitioning to verify that fire stopping had been properly applied at the head and foot of the partition, around door frames and around service openings. Review photographs of areas and elements were also reviewed. Details of the reviews on a monthly basis and issues identified together with the dates of the reviews are detailed in the IT Report and the Key Issues Report issued by Arcadis.

As a direct result of the issues raised on the fire-stopping issues on other hospitals (including Peterborough Hospital) that were evident before the publication of the Cole report Multiplex has updated their Quality Management procedures to put in place a rigorous inspection and recording protocol for this project. Multiplex have employed a specialist/certificated subcontractor to carry out the fire-stopping tasks on the project. All fire-stopping when completed is recorded; a sticker placed at the location suitably notated and the fire-stopping sticker is then photographed. These records then go into the QA system.

Astins the Sub-contractor use the 'Firetronic' system which is 'firas' accredited and will record all fire stopping on an electronic register, detailing all items. Additionally, prior to handover a photographic register of all above ceiling fire stopping will be captured using 'Multivista' documentation.

All fire doors are to be fitted by MMM Joinery who are BM Trada approved and have undergone 2<sup>nd</sup> part audits throughout the project. Fire door Maintenance has also been relayed to Bouygues FM at a workshop. See Appendix 6.

As with the brickwork, Building Control have reviewed samples of the fire-stopping during their regular visits.

**4.95 Air tightness – is that included in the witnessed tests?**

Arcadis have witness all planned tests to establish the correct methodology has been followed and that the results reported have been obtained. The IT will review the reports for all the tests for confirmation of compliance and to identify any

abnormalities in the tests not witnessed. This is a requirement of part of the Thermal Energy Efficiency Testing Procedure.

Multiplex continue to issue notifications to Arcadis. There is still one area to be tested. See attached Sample certificate and report together with schedule of tests – Appendix 7.

**4.96 Fire alarms – general alarms / lifts – are tests witnessed?**

Arcadis have sample witnessed wiring and functionality tests in all zones tested to date. The IT will witness the cause and effect demonstration of the fire alarm system and its interfaces with other systems such as door control, smoke/fire dampers, plant etc.

Zone A has been tested and witnessed with Cause and effect to follow. All lifts have been commissioned to BS EN 81, however final handover to be completed. Currently 4 in 'beneficial use'

**4.97 Differential air pressures / air handling. Are differential pressures (for infection control) and other critical air handling aspects part of witnessed tests?**

The IT will require the differential pressures (for infection control) to be demonstrated and pressures proved in accordance with SHTM 03-01 and SHPN 04-01 Supplement 1 for all relevant facilities together with the proving of fan/air handling unit safety interlocks and shut off dampers as part of the Ventilation testing and commissioning process. The facility has yet to reach the stage where this can be proved.

This has commenced- Theatres cascade to be demonstrated.

**4.98 Emergency power – witnessed test and validation when loaded.**

The IT will require all emergency power systems (generators, UPS etc) to be demonstrated and proved in accordance with SHTM 06-01 as part of the electrical testing and commissioning process. This will include a full 'black start' changeover test. The facility has yet to reach the stage where this can be proved.

Process in place to carry out this testing.

**4.99 Pre-handover statutory tests – covering all requirements such as electrical certificates, and building control documentation. Is the Independent Tester adequately resourced to ensure that these are received timeously?**

Arcadis commenced the review of the testing and commissioning results including the electrical testing process and is resourced to review 100% of the test



documentation. The methodology for undertaking the reviews together with the outcomes required are detailed in sheet XX of Appendix 1.

This has commenced – electrical certs will be issued as part of the Compliance documentation. Building Control inspections are ongoing on site and documentation will be delivered to an agreed list for ECC BCO to issue The Completion Certificate.

4.10 **As-built information. What as-built information is expected and when it is expected? Which information is required pre-handover for safe operation of the asset, and which other information is to be provided in accordance with the timescales set out in the contract. What is the format / usefulness of that information and how is it validated? IHSL certification that it represents “as built”?**

Multiplex are currently collating and reviewing the package contractor ‘As-built’ information, which will be uploaded to Aconex for review. This will be reviewed by Multiplex and an ‘approved’ or ‘rejected’ status assigned against the document register. Once accepted, these will be uploaded by each sub-contractor onto Zutec. The IT is monitoring this process to ensure the requirements for PC are met.

Sub-contractor ‘As-built’ information will be uploaded to aconex for Review. Once package manager and doc control have reviewed the as-built workflow, these will be able to find the ‘approved’ or ‘rejected’ status against the document register. Once accepted, these need to be uploaded by each sub-contractor onto Zutec. Draft O&M Manual is being collated and IT and Bouygues FM have full access to view the Manual. Bouygues will ultimately sign off the manuals as suitable. In line with Contract conditions, the Principal O&M Manual will be available 10 days post pc. Test & commissioning information will be included in the appropriate section on Zutec.

Regarding the BIM Model, at PC Multiplex will deliver the following;-

All BIM models listed in the BIM Execution Plan (BMCE-XX-XX-DC-003) in native file formats to the agreed LOD and LOI

All BIM models listed in the BIM Execution Plan (BMCE-XX-XX-DC-003) in IFC format to the agreed LOD and LOI

The final Federated As-Constructed Project Information Model in NWD format

RIBA Stage 6 Information Exchange using COBie-2012 as set out in the RHSC COBie Proposal

Digital handover incorporating Electronic O&M (O&M), commissioning, and snagging data (via Zutec)

As-built information which Bouygues would expect will include:

- Full asset information
- As-built drawings, schematics, schedules etc.
- As-built BIM Model
- Detailed Access & Maintenance Strategy
- Health & Safety file incorporating any residual H&S issues and the layouts of all mains services, including existing services running through the site.
- O&M manuals showing Standard and emergency operations for plant and equipment
- Manufacturers' recommended maintenance requirements – products, plant & equipment
- Details of product, plant and equipment service lives
- Product, plant and equipment underwritten warranties.
- Details of all subcontractors and suppliers
- Testing and commissioning records
- A fully populated Zutec System

## **List of Appendices**

Appendix 1: Arcadis Delivery Methodologies

Appendix 2: Brickwork QMS Checklist

Appendix 3: Curtain Walling Quality Record

Appendix 4: EFTE Roof Quality Record

Appendix 5: Roof Works Quality Record

Appendix 6: Firetronic / BORIS QA Certification

Appendix 7: Air Permeability Test Report

## **Individual methodologies for the delivery of the I.T. service**



## Elemental Methodology

### 1 Project Familiarisation

#### Process Description

This process is designed to provide a detailed understanding of the facility to be provided, its construction and engineering principles, the contractual arrangement under which the project is to proceed, the programme in which it is to be delivered and the requirements that are to be incorporated into the design.

#### Team involvement

All

#### Related Service Requirements

All

#### Related Construction Phase(s)

Mobilisation

#### Process Inputs

Review of :

- 
- Contractors Proposals
- Building Contract
- IT Contract
- Construction Programme
- Delivery Map

#### Process Outputs

Production of:

- Schedule of variance between requirements and proposals
- Schedule of compliance issues
- Monthly delivery plan (Meetings, visits reports etc.)

#### Outcomes

- Identification of interpretation issues
- Identification of conflicting requirements
- Understanding of the roles and responsibilities of the project parties
- Understanding of the outputs required from the IT

#### Service Benefits

- Provides a clear understanding of the roles of all project parties
- Allow issues to be identified and resolved
- Ensures accurate and effective communications and reporting
- Ensures that no areas are overlooked or unnecessary effort used when the output is not required

#### Example Case Study

Undertaking the review of documentation identified a misalignment in the timings of the certification process of a major Police provision in SE England.

#### Tools and Technology Deployed

- Issues Log

## 2 Works Design Compliance Checks

### Process Description

This process is designed to examine the design of the proposed facilities to be delivered and assess if they meet the stated requirements.

### Team involvement

All

### Related Service Requirements

All

### Related Construction Phase(s)

Mobilisation

### Process Inputs

Review of :

- Project Agreement and Schedules
- Contractors Proposals
- Building Contract
- IT Contract

### Process Outputs

Production of:

- Schedule of variance between requirements and proposals
- Schedule of compliance issues

### Outcomes

- Identification of compliance issues

### Service Benefits

- Provides a clear understanding of the requirements of all project parties
- Allow compliance issues to be identified and resolved
- Avoids delay at the construction phase whilst design issues are resolved

### Example Case Study

Undertaking the review of design identified an issue with ventilation requirements at a hospital in N. England.

### Tools and Technology Deployed

- Issues Log

### 3 Liaise with Project Parties and Principal Stakeholders

#### Process Description

This process is designed to integrate the role of the IT with the other project parties. Providing communication routes and processes to allow the interchange of information, concerns and issues to take place with the IT and the Authority, Project Co and the build contractor.

#### Team involvement

All

#### Related Service Requirements

All

#### Related Construction Phase(s)

Mobilisation, Construction, Completion and Post-completion

#### Process Inputs

Review of:

- The structure and individuals representing:
  1. The Board
  2. IHS Lothian
  3. Multiplex(Build Contractor)
  4. Other Principal Stakeholders

The contractual reporting processes

#### Process Outputs

Design of:

- Communication routes and frequencies
- Liaison process and indicative timetable

Production of:

- IT presentation on the IT role and its integration with the project delivery teams

#### Outcomes

- Identification of formal & informal reporting routes
- Agreement on the nature and frequency of the liaison process with the project parties
- Agreed process incorporated into

#### Service Benefits

- Communication processes are established and maintained to allow discussion, promote the flow of information and aid resolution of issues
- Fear of the IT's role is dispelled
- The integration of the IT within contract process (including certification) is understood
- Inputs to the IT are understood

#### Example Case Study

The agreement on a major Hospital project in the South East between the IT and the Trust's representative to meet on a monthly basis during one of the IT's site reviews to discuss any Trust issues or concerns prevented what could have been a major infection control problem from becoming an issue. The IT discussed the Trust's concerns with Project Co and the build contractor and an alternative fully compliant proposal was adopted without delaying the contract.

#### Tools and Technology Deployed

- Microsoft PowerPoint Presentation
- Issues Log

## 4 Comply with Health and Safety Requirements

### Process Description

This process is designed to integrate the role of the IT with the other site operations. Providing a framework for the IT team to operate safely on site within the operating procedures.

### Team involvement

All

### Related Service Requirements

All

### Related Construction Phase(s)

Mobilisation, Construction, Completion and Post-completion

### Process Inputs

- Multiplex(Build Contractor) health and safety procedures.

### Process Outputs

Design of:

- IT operational Procedures

### Outcomes

- Safe Operation on site

### Service Benefits

- Fast and effective site inspections

### Example Case Study

On a major Hospital project in the South East the IT team attended a full on site induction on site in advance of commencing activities. This avoided delays that occurred with sub-contractor organisations that had not provided appropriate PPE to their staff.

### Tools and Technology Deployed

## 5 Monitor Variations

### Process Description

This process is designed to examine the process and design content of proposed variations for compliance with the requirements

### Team involvement

All

### Related Service Requirements

All

### Related Construction Phase(s)

Mobilisation, Construction and Completion

### Process Inputs

Review of :

- Variation
- Project Agreement and Schedules
- Contractors Proposals
- Building Contract
- IT Contract

### Process Outputs

Production of:

- Confirmation of correct process
- Schedule of compliance issues

### Outcomes

- Confirmation of process
- Identification of compliance issues

### Service Benefits

- Avoids non-compliant variations or allows derogations if required
- avoids delay at the construction phase whilst design issues are resolved

### Example Case Study

Undertaking the review of variations identified an issue with fire alarm requirements at a school in London

### Tools and Technology Deployed

- Issues Log

## 6 Works Review Inspection

### Process Description

This process is designed to capture the activities of the IT during the area inspections for compliance with the design data.

### Related Service Requirements

- 13. Visual Inspection of sample rooms
- 2. Works Design Compliance Checks

### Related Construction Phase(s)

Construction phase

### Process Inputs

Review of Contract documentation:

- Requirements
- Room Data Sheets
- Floor plans
- Furniture and equipment layouts
- ICT & Telephone provisions
- Works specifications
- M&E services schematic drawings
- M&E specification – identifying required standards and legislation, plant and equipment schedules
- Schedules of Derogations
- Room / Area sizes

Site Review:

Structured review of area to review compliance against final requirements

### Process Outputs

Identification of:

- Non-compliant items
- Additional item

Production of:

- Population of Compliance Matrix and Issues Log

### Outcomes

- Compliance status of the works identified and recorded within the IT report
- Data collected used to populate the IT report
- Accountability identified for ratification of the snagging items and the timescales for completion of the works

### Service Benefits

- Ensure that all elements meet with requirements
- Assists with the quality of the works
- Improve opportunity for successful certification

### Example Case Study

Identification of exposed and poorly covered reinforcing at a Hospital development in London resulted in the methodology being revised early in the process with the remainder of the build being problem free.

### Tools and Technology Deployed

- Compliance Matrix
- Issues Log



## 7 Meeting Attendance

### Process Description

This process describes the mutual benefits to the Project Team and IT associated with meeting attendance.

### Related Service Requirements

All

### Related Construction Phase(s)

Construction

Completion

Post Construction

### Process Inputs

Information gathering:

- Prepare schedule of information required
- Information provision
- Prepare positional statement on compliance issues
- Prepare positional statement on quality issues
- Prepare positional statement on programme issues
- Prepare risk assessment
- Prepare positional statement on Certification Status

### Process Outputs

Obtain the current status regarding:

- Variations
- Design development
- Statutory bodies
- Planning issues

Advise Project team on:

- Compliance status
- Implementation of quality assurance processes
- Certification status
- Snagging issues

### Outcomes

- The IT is appraised of current design, construction and organisational issues.
- All individuals responsible for delivering the project are aware of the progress the IT has made towards certification and the current issues raised.

### Service Benefits

- Key issues are identified and discussed
- Arrangements for review of on-site activities are formalised
- Risk of non-compliance or delays is reduced

### Example Case Study

The attendance of the IT at a design review meeting for a Police Project in the South East identified that the agreed cladding process did meet an aspect of the design requirements. This issue was discussed and resolved by means of derogation with no delay to the contract.

### Tools and Technology Deployed

- IT Report
- Site review report

## 8 Produce a Monthly Report

### Process Description

This process is designed to capture the activities of the IT during the project and report on key issues to assist the project team to increase the success of Practical Completion.

### Related Service Requirements

All

### Related Construction Phase(s)

Construction phase

Completion phase

### Process Inputs

Review of :

- Works progress against the construction programme
- IT activities during the period
- Current compliance issues identified
- Resolution of identified issues
- Testing & commissioning progress

Attendance at:

- Month team meetings, technical meeting (e.g. Commissioning, Design) and other meetings as required
- Site inspections and reviews.

### Process Outputs

Production of:

- IT monthly report tracking the activities during the period and recoding status on key activities
- Capture key project issues
- Comment on quality issues, contractor's quality control procedures and reviewing and commenting on testing and commissioning activities.

### Outcomes

- Records status on compliance with Authority requirements,
- Non-compliant items are recorded and identified.
- Trends can be tracked allowing for quality of works to be improved.
- Key risks are identified

### Service Benefits

- All project parties have transparency of the activities of the IT
- Capture key project issues for early resolution to improve opportunity for successful certification.
- Level of risk associated with issues is identified

### Example Case Study

The IT report for a large Hospital project in Eastern England tracked the creation and clearance of non-conformance reports. This allowed the IT to demonstrate a trend regarding the lack of closure of concrete related items. Following the reporting of this issue an action plan was put in place to clear the backlog items.

### Tools and Technology Deployed

- IT Report

## 9 Monitor Quality Assurance Processes.

### Process Description

This process is designed to ensure the contractor's systems to effectively capture, monitor and close out non-compliances are robust.

### Related Service Requirements

9. Works Review Inspection

### Related Construction Phase(s)

Construction

Completion

### Process Inputs

Review of :

- Contractor's Quality Assurance process
- Identify the contractor has an inspection and test plan for each element of the works

Monitor:

- Execution of process by contractor / sub-contractor

Inspect & Review

- Construction processes for compliance
- Non-compliance issues are identified, monitored and rectified
- Non-compliance issues are signed off appropriately

### Process Outputs

- Site visit report scheduling review process and issues
- Key issues incorporated into IT report
- All issues risk assessed

### Outcomes

- Identification of issues with inspection and test plans
- Identification of the correct application of non-compliance process
- Appropriate level of approval provided to close out non-compliances
- Appropriate records are monitored

### Service Benefits

- Ensures audit trail of quality management exists
- Ensures all issues are closed out at an appropriate level

### Example Case Study

Lack of appropriate documentation relating to concrete strength resulted in additional destructive core tests of live building being required at a London school.

### Tools and Technology Deployed

- Compliance Matrix
- Issues Log

## 10 Inspect the Works for Compliance

### Process Description

This process is designed to capture the activities of the IT during the area inspections for compliance with the design data.

### Related Service Requirements

- 2. Works Design Compliance Check
- 5. Monitor Variations
- 6. Works Review Inspection

### Related Construction Phase(s)

Construction phase  
Completion or phase completion

### Process Inputs

- Review of Contract documentation:
- Requirements
- Variations
- Room Data Sheets
- Floor plans
- Furniture and equipment layouts
- ICT & Telephone provisions
- Works specifications
- M&E services schematic drawings
- M&E specification – identifying required standards and legislation
- Plant and equipment schedules
- Schedules of Derogations
- Room / Area sizes

### Process Outputs

Identification of:

- Non-compliant items
- Additional items

Production of:

- Population of Compliance Matrix and Issues Log

### Site Review:

- Structured review of completed area to review compliance against final requirements

### Outcomes

- Compliance status of the works identified and recorded within the IT report
- Data collected used to populate the IT report
- Accountability identified for rectification of issues and the timescales for completion of the works

### Service Benefits

- Ensure that the Works meet with requirements
- Assists with the quality of the works
- Improve opportunity for successful certification

### Example Case Study

Non-compliant areas identified during preliminary room reviews at a defence project allowed the use of the provision to be re-planned to adjust for the built provision.

### Tools and Technology Deployed

- Compliance Matrix
- Issues Log

## 11 Review Commissioning Programme

### Process Description

This process is designed to test and agree that the final commissioning programme provides a comprehensive and manageable framework for demonstrating compliance through a structured process through pro-actively assisting the Contractor where necessary, in guiding them towards the performance tests that will satisfy our requirements for Certification.

#### Related Service Requirements

1. Project Familiarisation
2. Works Design Compliance Check

#### Related Construction Phase(s)

- Construction phase  
Completion or phase completion

### Process Inputs

#### Obtain:

- Detailed method statements detailing how compliance with the output requirements and Completion Criteria will be demonstrated

#### Review of:

- Testing & Commissioning programme for appropriate periods and integration of activities with appropriate fabric, M&E and Infrastructure milestones. Ensure programme has identified allowances for The Board, IHS Lothian and IT activities.

#### Actions:

- Desk top study identify issues and/or non-compliance with the The Board requirements

### Process Outputs

#### Production of:

- Detailed Commissioning Matrix 1 to allow IT to fully monitor and report on Commissioning & Testing Processes
- Identification of integration issues and non-compliances
- Population of Compliance Matrix 2 and Issues Log 3.

### Outcomes

- Defined route to undertake the commissioning works reviewed by all parties
- All required tests and commissioning process are identified
- All activities are fully integrated

### Service Benefits

- Improve opportunity for successful certification at the earliest possible date
- Improved opportunity for systems performance that meets the requirements
- Avoidance of delays through incomplete structure or lack of appropriate supplies/services.

### Example Case Study

The identification of the lift commissioning dates being in advance of the planned provision of electrical supplies at a care home in the home countries allowed the installation of supplies to be brought forward.

### Tools and Technology Deployed

- Commissioning Matrix
- Issues Log
- Compliance Matrix

## 12 Witness Testing and Commissioning.

### Process Description

This process is designed to ensure the systems to commission the buildings have been developed and are being implemented correctly to achieve the design outputs.

### Related Service Requirements

2. Works Design Compliance Checks  
5. Monitor Variations  
11. Review Commissioning Programme

### Related Construction Phase(s)

Construction  
Completion

### Process Inputs

#### Review of :

- Proposed method statements are appropriate
- All required works are complete to allow commissioning to proceed
- Design outputs are available

#### Witnessing of:

- Planned Tests and Demonstrations

Note: we have allowed for witnessing an overall level of 50% of tests on completion. As part of this overall percentage we will sample at least one example of every type of test.

We will agree a programme of witnessing that will target key elements and systems.

#### Reviewing of:

- 100% of all test results

#### Evaluate:

- Test results and outcomes against required outputs

### Process Outputs

- Analysis of results through completion of:
- Commissioning Matrix to detail process
- Issues log to detail analysis of non-compliance and issues

#### Report on:

- Means of addressing non-compliance

### Outcomes

- Results of compliant tests are recorded
- Issues with non-compliant tests are highlighted

### Service Benefits

- Audit trail of the process is recorded
- Issues arising are reviewed and rectified in advance of completion tests

### Example Case Study

On a BSF scheme in North West England following the successful integration of all component systems during an integrated 'cause and effect' test on the fire safety system we identified an issue with a lift which had been preset to return to the ground floor position in a fire situation.

However the ground floor level served by this lift was an enclosed area with no direct fire escape route at that level.

The lift was reset to return to the 1<sup>st</sup> floor level which provided a direct escape route.

### **Tools and Technology Deployed**

- Commissioning Matrix
- Compliance Matrix
- Issues Log



## 13 Visual Inspection of Sample Rooms

### Process Description

This process is designed to capture the activities of the IT during the area inspections for compliance with the requirements and design data.

### Related Service Requirements

- 2. Works Design Compliance Check
- 5. Monitor Variations
- 6. Works Review Inspection

### Related Construction Phase(s)

- Construction phase
- Completion or phase completion

### Process Inputs

Review of Contract documentation:

- Requirements
- Variations
- Room Data Sheets
- Floor plans
- Furniture and equipment layouts
- ICT & Telephone provisions
- Works specifications
- M&E services schematic drawings
- M&E specification – identifying required standards and legislation
- Plant and equipment schedules
- Schedules of Derogations
- Room / Area sizes

### Site Review:

- Structured review of 50% of all rooms and 100% inspection of Appliance bays to review compliance against final requirements

### Process Outputs

Identification of:

- Non-compliant items
- Additional items

Production of:

- Population of Compliance Matrix and Issues Log

### Outcomes

- Compliance status of the works identified and recorded within the IT report
- Data collected used to populate the IT report
- Accountability identified for rectification of issues and the timescales for completion of the works

### Service Benefits

- Ensure that the rooms meet with requirements
- Assists with the quality of the works
- Improve opportunity for successful certification

### Example Case Study

Non-compliant areas identified during preliminary room reviews at a defence project allowed the use of the provision to be re-planned to adjust for the built provision.

### Tools and Technology Deployed

- Compliance Matrix
- Issues Log

## 14 Review Non-Compliance

### Process Description

This process is designed to ensure the contractor's systems to effectively capture, monitor and close out non-compliances are robust.

### Related Service Requirements

6. Works Review Inspection

9. Monitor Quality Assurance Processes

### Related Construction Phase(s)

Construction

Completion

### Process Inputs

Review of :

- Contractor's Non-conformance process
- Identify the contractor has an inspection and test plan for each element of the works

Monitor:

- Execution of process by contractor / sub-contractor

Inspect & Review

- Construction processes for compliance
- Non-compliance issues are identified, monitored and rectified
- Non-compliance issues are signed off appropriately

### Process Outputs

- Site visit report scheduling review process and issues
- Key issues incorporated into IT report
- All issues risk assessed

### Outcomes

- Identification of issues with inspection and test plans
- Identification of the correct application of non-compliance process
- Appropriate level of approval provided to close out non-compliances
- Appropriate records are monitored

### Service Benefits

- Ensures audit trail of quality management exists
- Ensures all issues are closed out at an appropriate level

### Example Case Study

Lack of appropriate documentation relating to concrete strength resulted in addition destructive core tests of live building being required at a London school.

### Tools and Technology Deployed

- Compliance Matrix
- Issues Log

## 15 Review O&M Manuals

### Process Description

This process is designed to ensure the completion documentation actively reflects the nature and requirements of the installed arrangements.

### Related Service Requirements

2. Works Design Compliance Check  
5. Monitor Variations  
12. Witness Testing and Commissioning

### Related Construction Phase(s)

Completion

### Process Inputs

Review of :

- O&M Manuals
- As Installed Drawings

Monitor:

- Inputs by contractor / sub-contractor

Inspect & Review

- Equipment Schedules
- Operational Processes
- Accuracy of drawings

### Process Outputs

- Site visit report scheduling review process and issues
- Key issues incorporated into IT report
- All issues risk assessed

### Outcomes

- Identification of issues with Documentation
- Appropriate records are monitored

### Service Benefits

- Ensures audit trail of quality management exists
- Ensures all issues are closed out at an appropriate level

### Example Case Study

Lack of updated documentation relating to the position of underground services on a MoD project was identified and prevented future maintenance and safety issues.

### Tools and Technology Deployed

- Compliance Matrix
- Issues Log

## 16 Certificate of Practical Completion

### Process Description

This process is designed to ensure that all the evidence and activities required to be undertaken and completed in order to issue a Certificate of Practical Completion have been completed prior to issuing the Certificate.

### Related Service Requirements

All

### Related Construction Phase(s)

Completion

### Process Inputs

Review of :

- Tests on completion
- Requirements for Acceptance.
- Subject to completion of snagging issues / acceptance of post completion snagging activities.
- All documentation required to consider compliance is archived.

### Process Outputs

Production of:

- An audit trail detailing the completion of all requirements.
- Clear action list for post completion snagging, if required.

### Outcomes

- Schedule of compliance

### Service Benefits

- Documented evidence of compliance.

### Example Case Study

From experience over a large number of projects we have found that the use of a 'RAG' rated compliance schedule is an invaluable tool in both ensuring that compliance of all elements is achieved and in assisting the Build Contractor to focus on the outstanding areas.

### Tools and Technology Deployed

- Compliance Schedule

## 17 Hand-back Certificate

### Process Description

This process is designed to ensure that all the evidence and activities required to be undertaken and completed in order to issue a Hand-back Certificate have been completed prior to issuing the Certificate.

### Related Service Requirements

All

### Related Construction Phase(s)

Completion

### Process Inputs

Review of :

- Tests on completion
- Requirements for Acceptance.
- Subject to completion of snagging issues / acceptance of post completion snagging activities.
- All documentation required to consider compliance is archived.

### Process Outputs

Production of:

- An audit trail detailing the completion of all requirements.
- Clear action list for post completion snagging, if required.

### Outcomes

- Schedule of compliance

### Service Benefits

- Documented evidence of compliance.

### Example Case Study

From experience over a large number of projects we have found that the use of a 'RAG' rated compliance schedule is an invaluable tool in both ensuring that compliance of all elements is achieved and in assisting the Build Contractor to focus on the outstanding areas.

### Tools and Technology Deployed

- Compliance Schedule

## 18 Snagging Notice and Review

### Process Description

This process is designed to capture all outstanding snagging matters at certification. It is recognised that there will be outstanding snagging matters at Acceptance, and that the works can be certified subject to resolution of these snagging matters, providing the functional operation of the facility is not compromised and does not adversely affect the safe use or operation of the asset.

### Related Service Requirements

13. Visual Inspection of Sample Rooms

16. Issue of Certificate of Acceptance Certificate

19. Issue of Certificate of Post Completion Works Acceptance Certificate

### Related Construction Phase(s)

Completion

### Process Inputs

Review of :

- Monitor the Contractor's compilation of their own snagging process to identify when the issue of practical completion would be appropriate
- As part of the room and space review prepare a schedule of outstanding snags
- Review in advance of the Acceptance Date sample areas to ascertain the type of snagging matters relative to the above criteria and make an assessment as to whether these items will adversely impact on the use or operation of the facility.

### Process Outputs

Production of:

- Prepare the snagging matters and issue to the project parties

### Outcomes

- Snagging items are identified

### Service Benefits

- Central collation of the snagging items.

### Example Case Study

The extent of snags can have an adverse effect on the operational function of a facility. The process for a care facility in the home counties identified a level of snags that was inappropriate for practical completion to be issued. PC was delayed until the level of outstanding snags allowed functional operation to be achieved.

### Tools and Technology Deployed

- Snagging Schedule

## 19 Decant Protocol

### Process Description

This process is to allow LBF access to the facilities prior to Acceptance.

### Related Service Requirements

13. Visual Inspection of Sample Rooms

16. Issue of Certificate of Acceptance Certificate

19. Issue of Certificate of Post Completion Works Acceptance Certificate

### Related Construction Phase(s)

Completion

### Process Inputs

- None. The IT is to recognise the process

### Process Outputs

- None. The IT is to recognise the process

### Outcomes

- None. The IT is to recognise the process

### Service Benefits

- The Board are able to undertake controlled activities prior to Acceptance

### Example Case Study

Similar arrangement to install ICT equipment at Police Facilities in Norfolk and Suffolk.

### Tools and Technology Deployed

- None. The IT is to recognise the process



## 20 Commissioning Completion Certificate

### Process Description

This process is designed to ensure that all the evidence and activities required to be undertaken and completed in order to issue a Commissioning Completion Certificate have been completed prior to issuing the Certificate.

### Related Service Requirements

All

### Related Construction Phase(s)

Completion

### Process Inputs

Review of:

- Tests on completion
- Requirements for Acceptance.
- Overseeing the commissioning process.

### Process Outputs

Production of:

- An audit trail detailing the completion of all requirements

### Outcomes

- Schedule of compliance

### Service Benefits

- Documented evidence of compliance.

### Example Case Study

From experience over a large number of projects we have found that the use of a 'RAG' rated compliance schedule is an invaluable tool in both ensuring that compliance of all elements is achieved and in assisting the Build Contractor to focus on the outstanding areas.

### Tools and Technology Deployed

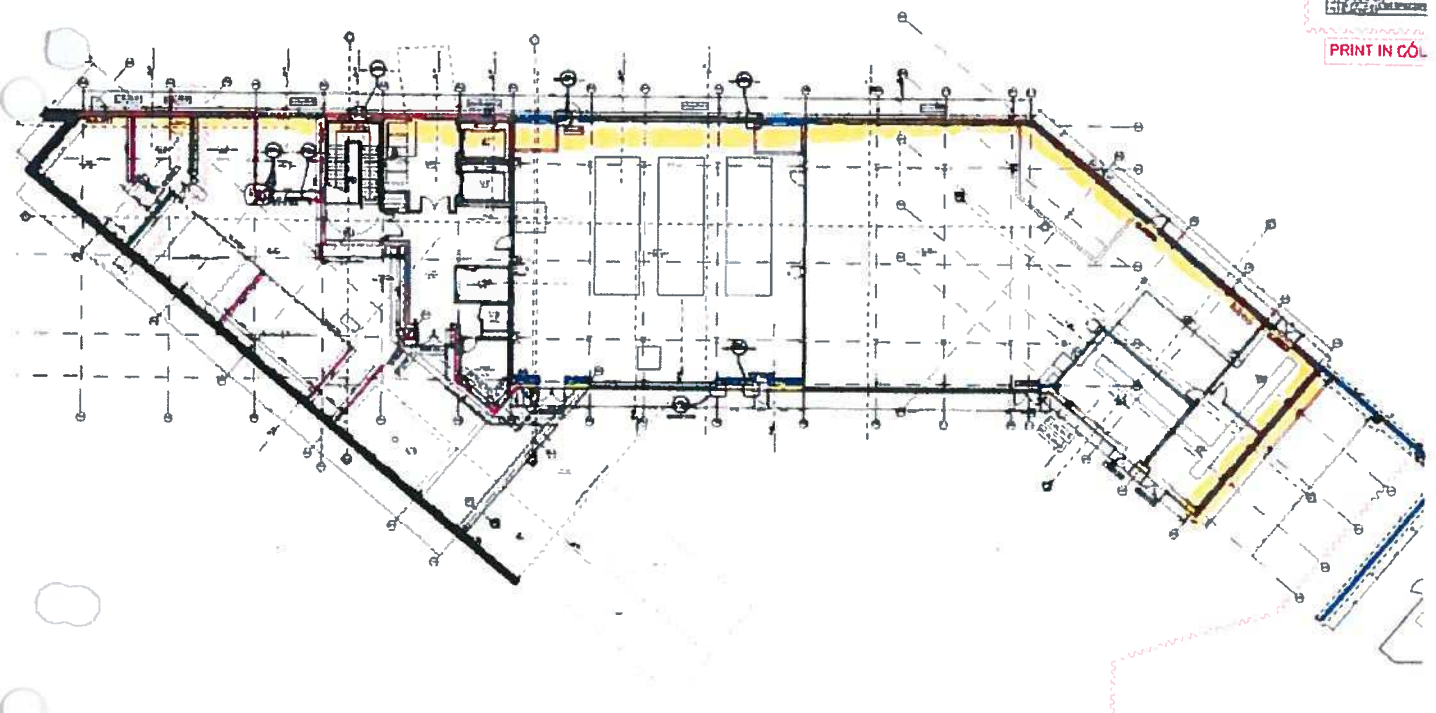
- Compliance Schedule

9A.

Brickwork.

Energy centre  
external Brickwork  
Superstructure

20



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**RHSC & DCN, Edinburgh**  
Brickwork and Blockwork

QMS CHECKLIST No:- 20

ELEMENT - INTERNAL / EXTERNAL WALLS

LOCATION: Energy Centre

LEVEL: Op.c - finish height

GRIDLINE: X00 - W06 - V09

WALL REF: North & West Elevation

Check previous trades work  
Set out and check  
Materials to be used

.....  
.....  
.....  
State Blue Smooth facing brick

| HOLD POINT          | CHECKED | DATE    | REMARKS |
|---------------------|---------|---------|---------|
| DPM                 | N/A     | —       | —       |
| DPC                 | ✓       | 13/2/17 | —       |
| Wall finish         | ✓       | 13/2/17 | ok      |
| Ties                | ✓       | 13/2/17 | ok      |
| Joint reinforcement | ✓       | 13/2/17 | ok      |
| Movement joints     | ✓       | 13/2/17 | ok      |
| Openings            | ✓       | 13/2/17 | ok      |
| Lintols             | ✓       | 13/2/17 | ok      |
| Lintol heights      | ✓       | 13/2/17 | ok      |
| Finished heights    | ✓       | 13/2/17 | ok      |
| Plumb and line      | ✓       | 13/2/17 | ok      |
| Soft joints         | ✓       | 13/2/17 | ok      |
| Head restraint      | ✓       | 13/2/17 | ok      |
| Cavity              | N/A     | —       | —       |
| Mortar Class 2      | ✓       | 13/2/17 | ok      |
| Mortar Class 3      | ✓       | 13/2/17 | ok      |

LSL Project Manager Sign: [Redacted] Print: [Redacted] Date: 13/2/17

Multiplex Construction Sign: [Redacted] Print: S [Redacted] Date: 16/2/17

Building Control Sign: \_\_\_\_\_ Print: \_\_\_\_\_ Date: \_\_\_\_\_  
(where necessary)





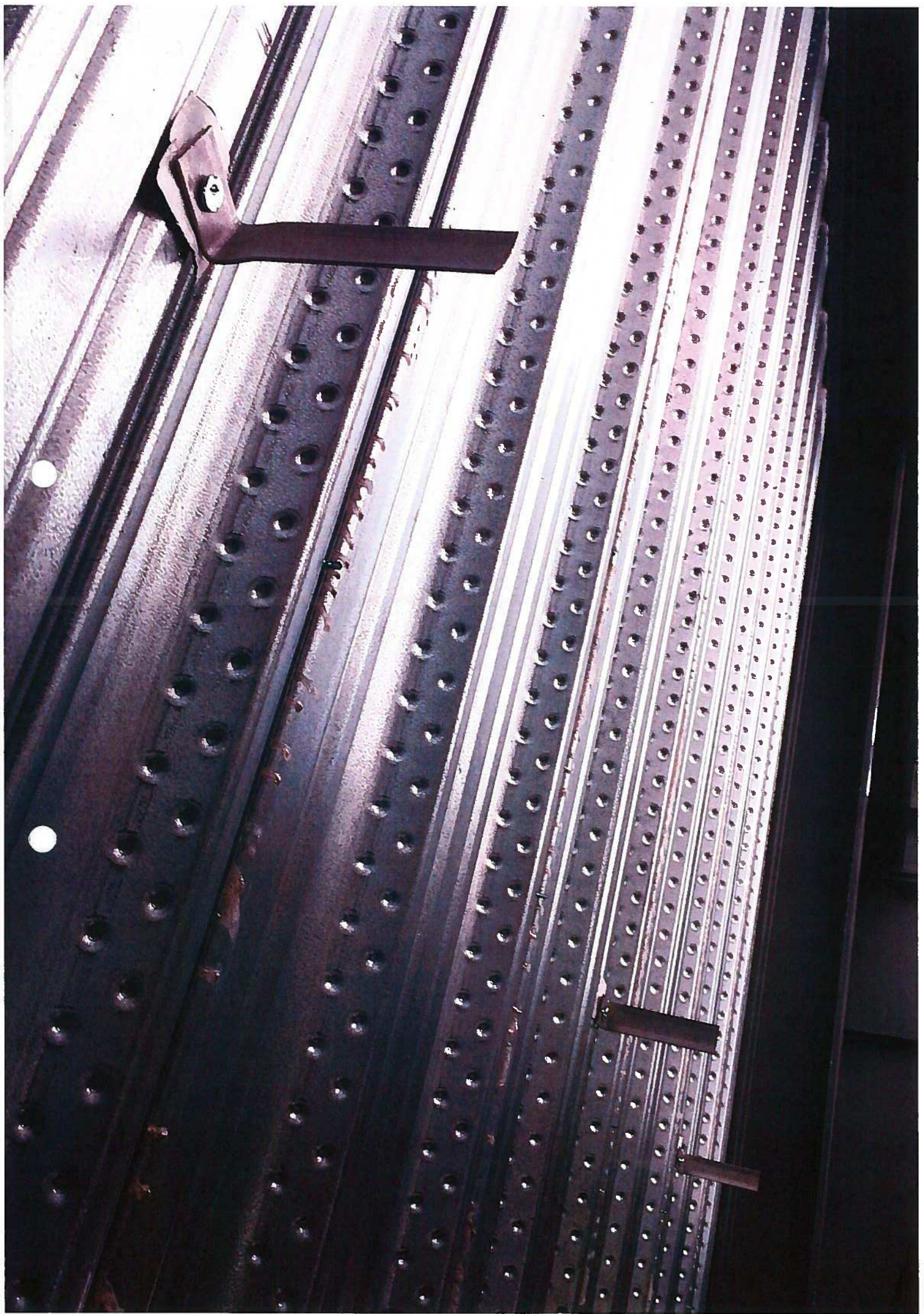


















**RHSC & DCN, Edinburgh**  
Brickwork and Blockwork

QMS CHECKLIST No:- 2

ELEMENT - INTERNAL / EXTERNAL WALLS

LOCATION: Zone A

LEVEL: op - finish height

GRIDLINE: Ax - Bz

WALL REF: Ext Elevation

Check previous trades work  
Set out and check  
Materials to be used

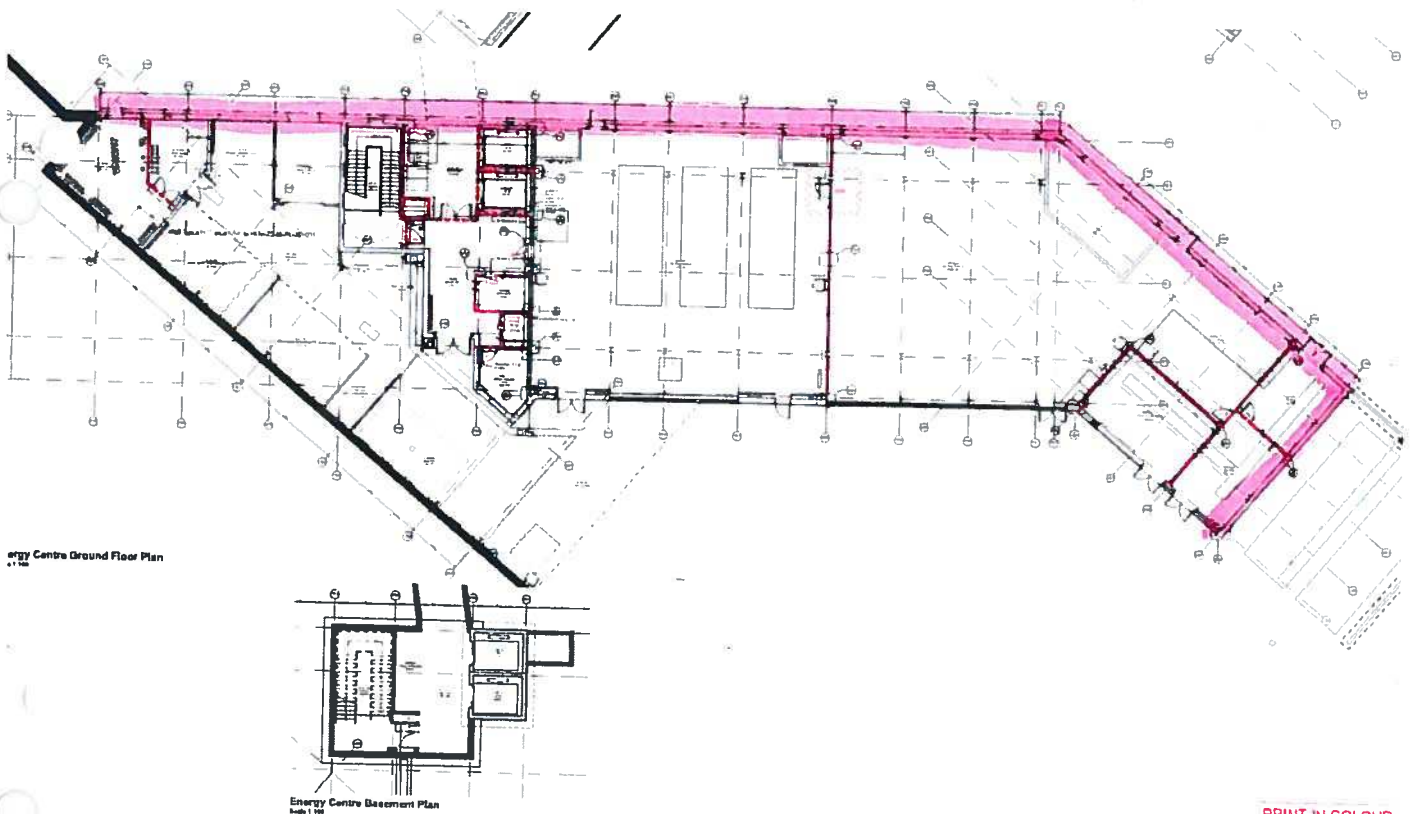
✓  
✓  
Stark Blue Smoothfacing brick

| HOLD POINT          | CHECKED    | DATE           | REMARKS   |
|---------------------|------------|----------------|-----------|
| DPM                 | <u>N/A</u> | <u>—</u>       | <u>—</u>  |
| DPC                 | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Wall finish         | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Ties                | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Joint reinforcement | <u>N/A</u> | <u>—</u>       | <u>—</u>  |
| Movement joints     | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Openings            | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Lintols             | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Lintol heights      | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Finished heights    | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Plumb and line      | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Soft joints         | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Head restraint      | <u>N/A</u> | <u>—</u>       | <u>—</u>  |
| Cavity              | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Mortar Class 2      | ✓          | <u>20-9-16</u> | <u>OK</u> |
| Mortar Class 3      | <u>N/A</u> | <u>—</u>       | <u>—</u>  |

LSL Project Manager Sign: [Signature] Print: [Signature] Date: 20/9/16

Multiplex Construction Sign: [Signature] Print: [Signature] Date: 28-9-16

Building Control Sign: \_\_\_\_\_ Print: \_\_\_\_\_ Date: \_\_\_\_\_  
(where necessary)



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**RHSC & DCN, Edinburgh**  
Brickwork and Blockwork

QMS CHECKLIST No:- 14

ELEMENT - <sup>\*</sup>INTERNAL / EXTERNAL WALLS

LOCATION: Energy Centre

LEVEL: FFL To finish height

GRIDLINE: X-00-W06-V09

WALL REF: Perimeter walls

Check previous trades work  
Set out and check  
Materials to be used

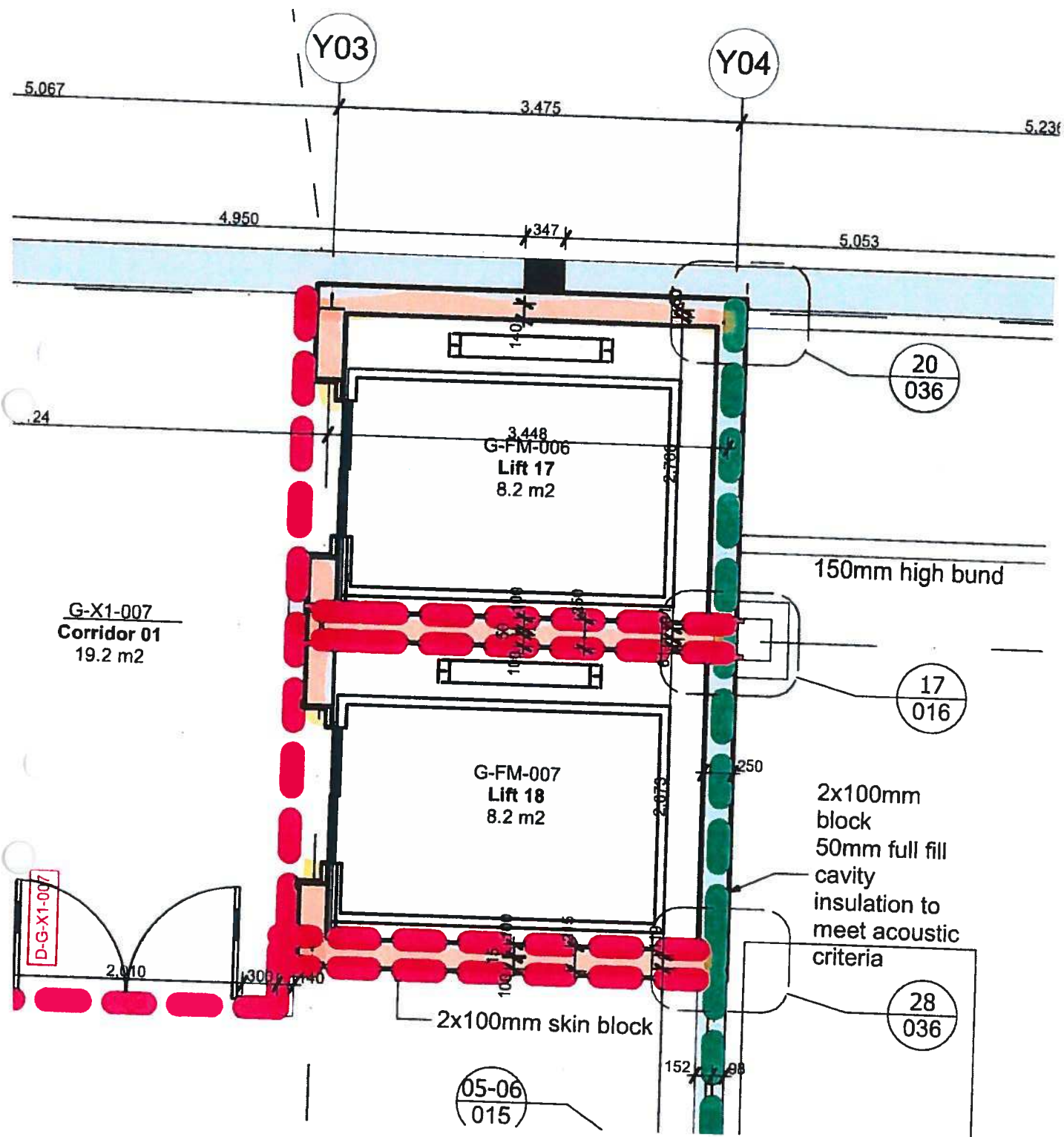
100mm T.N. P/G Block cement

| HOLD POINT          | CHECKED    | DATE           | REMARKS   |
|---------------------|------------|----------------|-----------|
| DPM                 | <u>N/A</u> | <u>-</u>       | <u>-</u>  |
| DPC                 | <u>✓</u>   | <u>7-12-16</u> | <u>OK</u> |
| Wall finish         | <u>✓</u>   | <u>7-12-16</u> | <u>OK</u> |
| Ties                | <u>✓</u>   | <u>7-12-16</u> | <u>OK</u> |
| Joint reinforcement | <u>✓</u>   | <u>7-12-16</u> | <u>OK</u> |
| Movement joints     | <u>✓</u>   | <u>7-12-16</u> | <u>OK</u> |
| Openings            | <u>✓</u>   | <u>7-12-16</u> | <u>OK</u> |
| Lintols             | <u>✓</u>   | <u>7-12-16</u> | <u>OK</u> |
| Lintol heights      | <u>✓</u>   | <u>7-12-16</u> | <u>OK</u> |
| Finished heights    | <u>✓</u>   | <u>7-12-16</u> | <u>OK</u> |
| Plumb and line      | <u>✓</u>   | <u>7-12-16</u> | <u>OK</u> |
| Soft joints         | <u>✓</u>   | <u>7.12.16</u> | <u>OK</u> |
| Head restraint      | <u>✓</u>   | <u>7.12.16</u> | <u>OK</u> |
| Cavity              | <u>✓</u>   | <u>7.12.16</u> | <u>OK</u> |
| Mortar Class 2      | <u>N/A</u> | <u>-</u>       | <u>-</u>  |
| Mortar Class 3      | <u>✓</u>   | <u>7.12.16</u> | <u>OK</u> |

LSL Project Manager Sign: [Signature] Print: [Name] Date: 7.12.16

Multiplex Construction Sign: [Signature] Print: [Name] Date: 12-12-16

Building Control Sign: [Signature] Print: [Name] Date: [Date]  
(where necessary)







**RHSC & DCN, Edinburgh**  
Brickwork and Blockwork

QMS CHECKLIST No:- 15

ELEMENT - INTERNAL / EXTERNAL WALLS

LOCATION: Energy Centre

LEVEL: FFL - finish height

GRIDLINE: 703-704

WALL REF: Ext Shafts

Check previous trades work  
Set out and check  
Materials to be used

Cemex 140mm min. Black dense p/g  
Cemex 100mm Black dense p/g

| HOLD POINT          | CHECKED | DATE    | REMARKS |
|---------------------|---------|---------|---------|
| DPM                 | N/A     | —       | —       |
| DPC                 | N/A     | —       | —       |
| Wall finish         | ✓       | 17-1-17 | OK      |
| Ties                | ✓       | 17-1-17 | OK      |
| Joint reinforcement | ✓       | 17-1-17 | OK      |
| Movement joints     | ✓       | 17-1-17 | OK      |
| Openings            | ✓       | 17-1-17 | OK      |
| Lintols             | ✓       | 17-1-17 | OK      |
| Lintol heights      | ✓       | 17-1-17 | OK      |
| Finished heights    | ✓       | 17-1-17 | OK      |
| Plumb and line      | ✓       | 17-1-17 | OK      |
| Soft joints         | ✓       | 17-1-17 | OK      |
| Head restraint      | ✓       | 17-1-17 | OK      |
| Cavity              | N/A     | —       | —       |
| Mortar Class 2      | N/A     | —       | —       |
| Mortar Class 3      | ✓       | 17-1-17 | OK      |

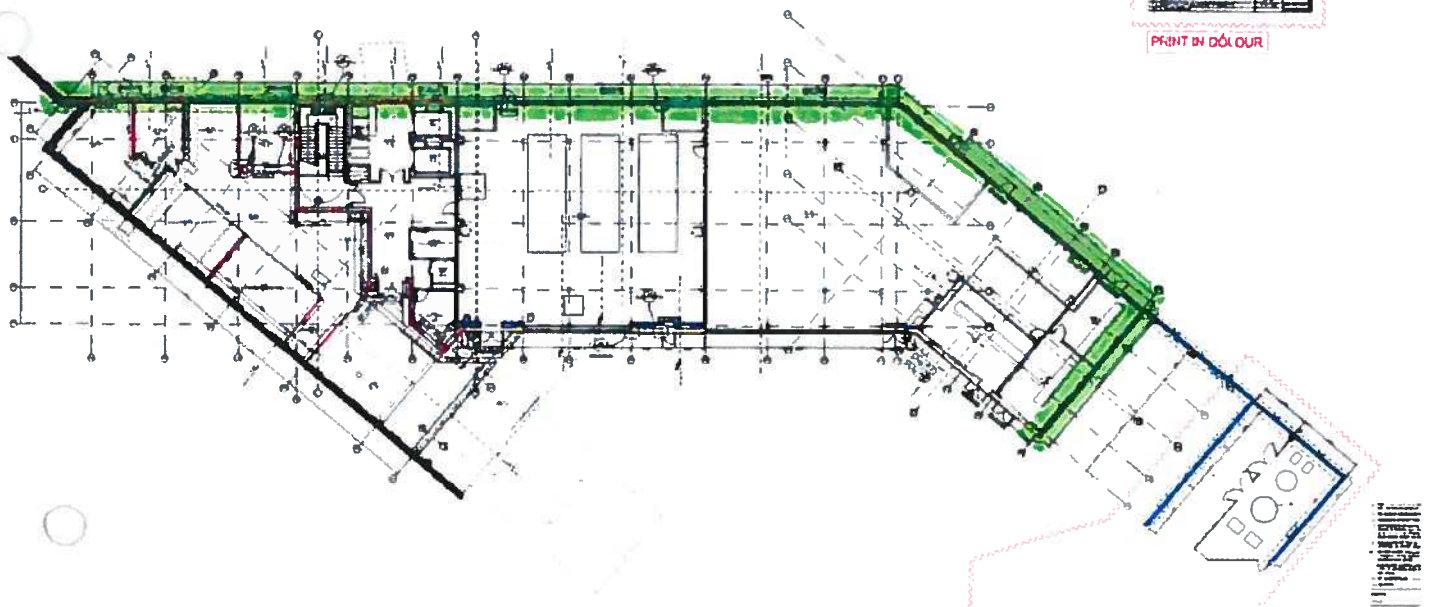
LSL Project Manager Sign: [Signature] Print: [Name] Date: 17.1.17

Multiplex Construction Sign: [Signature] Print: [Name] Date: 20-1-17

Building Control Sign: \_\_\_\_\_ Print: \_\_\_\_\_ Date: \_\_\_\_\_  
(where necessary)

Energy centre  
external Blackwork  
Substructure

19







**RHSC & DCN, Edinburgh**  
Brickwork and Blockwork

QMS CHECKLIST No:- 19

ELEMENT - INTERNAL / EXTERNAL WALLS

LOCATION Energy Centre

LEVEL Substructure - APC


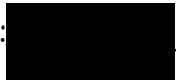
GRIDLINE X00 - W06 - V09

WALL REF North & West Elevation

Check previous trades work  
Set out and check  
Materials to be used

✓  
✓  
Slate, Blue Smooth facing brick

| HOLD POINT          | CHECKED | DATE    | REMARKS |
|---------------------|---------|---------|---------|
| DPM                 | N/A     | —       | —       |
| DPC                 | N/A     | —       | —       |
| Wall finish         | ✓       | 7/11/16 | ok      |
| Ties                | ✓       | 7/11/16 | ok      |
| Joint reinforcement | N/A     | —       | —       |
| Movement joints     | ✓       | 7/11/16 | ok      |
| Openings            | N/A     | —       | —       |
| Lintols             | N/A     | —       | —       |
| Lintol heights      | N/A     | —       | —       |
| Finished heights    | ✓       | 7/11/16 | ok      |
| Plumb and line      | ✓       | 7/11/16 | ok      |
| Soft joints         | ✓       | 7/11/16 | ok      |
| Head restraint      | N/A     | —       | —       |
| Cavity              | ✓       | 7/11/16 | ok      |
| Mortar Class 2      | ✓       | 7/11/16 | ok      |
| Mortar Class 3      | N/A     | —       | —       |

LSL Project Manager Sign:  Print:  Date: 7/11/16

Multiplex Construction Sign:  Print:  Date: 7/11/16

Building Control Sign: \_\_\_\_\_ Print: \_\_\_\_\_ Date: \_\_\_\_\_  
(where necessary)

9B.

CULTAINWALLING

# CURTAINWALL CHECK LIST

Site Name: **RHSC & DCN**

Main Contractor

**Multiplex**

AD: **4725**

Screen Ref **CW-01-001**

Elevation

Level **1**

| No                                  | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check                               |
|-------------------------------------|--|----------------------------------|---|
| 1                                   | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence    | GP                               | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE |
| 2                                   | Check material specification, quality and quantity – report any issues   | GP                               |   |
| 3                                   | Study drawings and building works before commencing installation   | GP                               |   |
| 4                                   | Ensure handover is in place from Main Contractor   | GP                               |   |
| 5                                   | Check accuracy of openings   | GP                               |   |
| <b>Quality Check</b>                |  |                                  |   |
| 1                                   | Check head fixings, base fixings and if applicable mid fixings   | GP                               | Hold Point 1  |
| 2                                   | Check height from datum, and position to gridline, confirm correct to latest drawings                                    | GP                               |   |
| 3                                   | Check head and base channels for level plumb and square  | GP                               |   |
| 4                                   | Check gaskets are installed in accordance with latest drawings   | GP                               |   |
| 5                                   | Check glass is correctly seated on packers, spaced and all gaps are uniform  | GP                               |   |
| 6                                   | Check all EPDM seals are installed in accordance with latest approved drawings   |                                  | Hold Point 2  |
| 7                                   | Check all feature pressings, and cills are installed in accordance with latest drawings                                  |                                  |   |
| 8                                   | Check all face caps are installed in accordance with latest drawings   |                                  |   |
| 9                                   | Check all external pointing is satisfactory and installed in accordance with latest drawings                             |                                  |   |
| <b>Visual and Operational Check</b> |  |                                  |   |
| 1                                   | Remove labels and tapes  | GP                               | * EXPANDING Joints FROM OTHERS  |
| 2                                   | Check all packers are neatly trimmed back  | GP                               |   |
| 3                                   | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                  | GP                               | SHEET 2 of 3  |
| 4                                   | Check glass is installed correctly and inspect to appropriate GGF criteria <b>ALL DAMAGE TO BE RECORDED BELOW</b>        | GP                               |   |
| 5                                   | Inspect frames, channels, pressings and any other components. <b>ALL DAMAGE TO BE RECORDED</b>                           | GP                               |   |
| 6                                   | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)  |                                  |   |
| 7                                   | Install protection if specified in tender or as instructed by main contractor – <b>FINAL HANDOVER TO MAIN CONTRACTOR</b> |                                  |   |

## COMMENTS

Please note any comments on reverse of sheet - Any defects or damage **MUST** be recorded

**Henshaw Sub-contractor**

Name [REDACTED] Signature [REDACTED] Date **12-4-17**

**Henshaw Manager**

Name [REDACTED] Signature [REDACTED] Date [REDACTED]

**Main Contractor**

Name [REDACTED] Signature [REDACTED] Date **13/4/2017**

HP1

IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE

9820 O/ALL SCREEN WIDTH



2005 MULLION CTRS

**Signed :** \_\_\_\_\_

# DOOR CHECK LIST

Site Name: RHSC & DCN

Main Contractor: Multiplex CE

AD: 4725

Door Ref: FD-00-005

Zone A

Level GF

| No                           | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check                               |
|------------------------------|--|----------------------------------|---|
| 1                            | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence        | CP                               | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE |
| 2                            | Check material specification, quality and quantity – report any issues   | CP                               |   |
| 3                            | Study drawings and building works before commencing installation   | CP                               |   |
| 4                            | Ensure handover is in place from Main Contractor   | CP                               |   |
| 5                            | Check accuracy of openings   | CP                               |   |
| Quality Check                |  |                                  |   |
| 1                            | Check head fixings, base fixings and if applicable mid fixings   | CP                               | ↑   |
| 2                            | Check height from datum, and position to gridline, confirm correct to latest drawings  | CP                               |   |
| 3                            | Check head and base for level plumb and square   | CP                               |   |
| 4                            | Check gaskets are installed in accordance with latest drawings   | CP                               |   |
| 5                            | Check glass is correctly seated on packers, spaced and all gaps are uniform  | CP                               |   |
| 6                            | Check hinges, pivots and closers, ensure margins are equal around door   | CP                               |   |
| 7                            | Check threshold is level and silicone seal is adequate   | CP                               |   |
| 8                            | Check handles, locks, stops, letter plates are all fitted and operational  | CP                               |   |
| 9                            | Check all external and internal pointing is satisfactory and installed in accordance with latest drawings (where applicable) |                                  |   |
| Visual and Operational Check |  |                                  |   |
| 1                            | Remove labels and tapes as instructed by Main Contractor , check all packers are neatly trimmed back                         | CP                               | SMAC 18/11<br>↓<br>AS NOTED THRESHOLD                                     |
| 2                            | Check operation of door, locks, closers and all other components<br>Check door margins are even                              | CP                               |   |
| 3                            | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                      | CP                               |   |
| 4                            | Check glass is installed correctly and inspect to appropriate GGF criteria <b>ALL DAMAGE TO BE RECORDED</b>                  | CP                               |   |
| 5                            | Inspect frames, channels, pressings and any other components. <b>ALL DAMAGE TO BE RECORDED</b>                               | CP                               |   |
| 6                            | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)      |                                  |   |
| 7                            | Install protection as specified in tender or as instructed by main contractor – <b>FINAL HANDOVER TO MAIN CONTRACTOR</b>     |                                  |   |

## COMMENTS

Please note any comments on reverse of sheet - Any defects or damage **MUST** be recorded

CHSL Sub-con: Name [REDACTED] Signature [REDACTED] Date 10/4/17

CHSL Manager: Name [REDACTED] Signature [REDACTED] Date [REDACTED]

Main Contractor: Name [REDACTED] Signature [REDACTED] Date 18/4/17

IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE

**Project Name : RHSC & DCN**

Screen Ref: FD-00-005

**$\overline{AD} : 4725$**

176

| Item | Description of Works         | Comp |
|------|------------------------------|------|
| 1.   | THRESHOLD NOT FITTED         |      |
| 2.   | DOOR LEAFS INJURED IN HEIGHT |      |

Remedial works actioned and complete.

Name : \_\_\_\_\_

Date : \_\_\_\_\_

**Signed:**



# DOOR CHECK LIST

Site Name: RHSC & DCN


Main Contractor: Multiplex CE

AD: 4725

Door Ref: ED-00-006

Zone A

Level GF

| No                           | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check  |
|------------------------------|--|----------------------------------|--|
| 1                            | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence        | CP                               | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE            |
| 2                            | Check material specification, quality and quantity – report any issues   | CP                               |  |
| 3                            | Study drawings and building works before commencing installation   | CP                               |  |
| 4                            | Ensure handover is in place from Main Contractor   | .                                |  |
| 5                            | Check accuracy of openings   | CP                               |  |
| Quality Check                |  |                                  |  |
| 1                            | Check head fixings, base fixings and if applicable mid fixings   | CP                               |  |
| 2                            | Check height from datum, and position to gridline, confirm correct to latest drawings  | CP                               |  |
| 3                            | Check head and base for level plumb and square   | CP                               |  |
| 4                            | Check gaskets are installed in accordance with latest drawings   | CP                               |  |
| 5                            | Check glass is correctly seated on packers, spaced and all gaps are uniform  | CP                               |  |
| 6                            | Check hinges, pivots and closers, ensure margins are equal around door   | CP                               |  |
| 7                            | Check threshold is level and silicone seal is adequate   |                                  |  |
| 8                            | Check handles, locks, stops, letter plates are all fitted and operational  |                                  |  |
| 9                            | Check all external and internal pointing is satisfactory and installed in accordance with latest drawings (where applicable) |                                  |  |
| Visual and Operational Check |  |                                  |  |
| 1                            | Remove labels and tapes as instructed by Main Contractor , check all packers are neatly trimmed back                         | CP                               | No T<br>AS NOTED 18/4 J  |
| 2                            | Check operation of door, locks, closers and all other components<br>Check door margins are even                              | CP                               |  |
| 3                            | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                      | CP                               |  |
| 4                            | Check glass is installed correctly and inspect to appropriate GGF criteria <b>ALL DAMAGE TO BE RECORDED</b>                  | CP                               |  |
| 5                            | Inspect frames, channels, pressings and any other components. <b>ALL DAMAGE TO BE RECORDED</b>                               | CP                               |  |
| 6                            | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)      |                                  |  |
| 7                            | Install protection as specified in tender or as instructed by main contractor – <b>FINAL HANDOVER TO MAIN CONTRACTOR</b>     |                                  |  |

## COMMENTS

Please note any comments on reverse of sheet - Any defects or damage MUST be recorded

CHSL Sub-con: Name [REDACTED] Signature \_\_\_\_\_ Date \_\_\_\_\_

CHSL Manager: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Main Contractor: Name [REDACTED] Signature \_\_\_\_\_ Date 18/4/2017

IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE



**Project Name : RHSC & DCN**

Screen Ref: 57-00-0006

**$\overline{AD} : 4725$**

lv: ח

| Item | Description of Works       | Comp |
|------|----------------------------|------|
| 1    | THRESHOLD NOT FITTED       |      |
| 2    | REMOVE STICKERS FROM GLASS |      |

Remedial works actioned and complete.

**Name :** \_\_\_\_\_

Date : \_\_\_\_\_

**Signed:**

**DOOR CHECK LIST**Site Name: RHSC & DCNMain Contractor: Multiplex CEAD: 4725Door Ref: ED-00-007Zone ALevel GF

| No                           | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check  |
|------------------------------|--|----------------------------------|--|
| 1                            | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence        | GP                               | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE                                  |
| 2                            | Check material specification, quality and quantity – report any issues   | GP                               |  |
| 3                            | Study drawings and building works before commencing installation   | GP                               |  |
| 4                            | Ensure handover is in place from Main Contractor   |                                  |  |
| 5                            | Check accuracy of openings   | GP                               |  |
| Quality Check                |  |                                  | <div>↑</div> <div>NO DEFECTS FOUND</div> <div>JMAC</div> <div>18/4</div> <div>↓</div> <div>AS NOTED.</div> |
| 1                            | Check head fixings, base fixings and if applicable mid fixings   | GP                               |  |
| 2                            | Check height from datum, and position to gridline, confirm correct to latest drawings  | GP                               |  |
| 3                            | Check head and base for level plumb and square   | GP                               |  |
| 4                            | Check gaskets are installed in accordance with latest drawings   | GP                               |  |
| 5                            | Check glass is correctly seated on packers, spaced and all gaps are uniform  | GP                               |  |
| 6                            | Check hinges, pivots and closers, ensure margins are equal around door   |                                  |  |
| 7                            | Check threshold is level and silicone seal is adequate   |                                  |  |
| 8                            | Check handles, locks, stops, letter plates are all fitted and operational  |                                  |  |
| 9                            | Check all external and internal pointing is satisfactory and installed in accordance with latest drawings (where applicable) |                                  |  |
| Visual and Operational Check |  |                                  |  |
| 1                            | Remove labels and tapes as instructed by Main Contractor , check all packers are neatly trimmed back                         | GP                               |  |
| 2                            | Check operation of door, locks, closers and all other components   | GP                               |  |
| 3                            | Check door margins are even  | GP                               |  |
| 4                            | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                      | GP                               |  |
| 5                            | Check glass is installed correctly and inspect to appropriate GGF criteria <b>ALL DAMAGE TO BE RECORDED</b>                  | GP                               |  |
| 6                            | Inspect frames, channels, pressings and any other components. <b>ALL DAMAGE TO BE RECORDED</b>                               | GP                               |  |
| 7                            | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)      |                                  |  |
| 7                            | Install protection as specified in tender or as instructed by main contractor – <b>FINAL HANDOVER TO MAIN CONTRACTOR</b>     |                                  |  |

**COMMENTS**Please note any comments on reverse of sheet - **Any defects or damage MUST be recorded**

CHSL Sub-con: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

CHSL Manager: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Main Contractor: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date 18/04/2012**IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE**

**Project Name : RHSC & DCN**

Screen Ref: 17-00-007

**$\overline{AD} : 4725$**

176: 10

| Item | Description of Works       | Comp |
|------|----------------------------|------|
| 1    | THRESHOLD ADJUT FITTED     |      |
| 2    | REMOVE STICKERS FROM GLASS |      |

Remedial works actioned and complete.

Name : \_\_\_\_\_

Date : \_\_\_\_\_

**Signed:**

**DOOR CHECK LIST**

Site Name: RHSC &amp; DCN

Main Contractor: Multiplex CE

AD: 4725

Door Ref: ED-00-008

Zone A

Level GF

| No                           | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check                               |
|------------------------------|--|----------------------------------|---|
| 1                            | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence        | GP                               | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE |
| 2                            | Check material specification, quality and quantity – report any issues   | GP                               |   |
| 3                            | Study drawings and building works before commencing installation   | GP                               |   |
| 4                            | Ensure handover is in place from Main Contractor   | GP                               |   |
| 5                            | Check accuracy of openings   | GP                               |   |
| Quality Check                |  |                                  |   |
| 1                            | Check head fixings, base fixings and if applicable mid fixings   | GP                               | ↑   |
| 2                            | Check height from datum, and position to gridline, confirm correct to latest drawings  | GP                               |   |
| 3                            | Check head and base for level plumb and square   | GP                               |   |
| 4                            | Check gaskets are installed in accordance with latest drawings   | GP                               |   |
| 5                            | Check glass is correctly seated on packers, spaced and all gaps are uniform  | GP                               |   |
| 6                            | Check hinges, pivots and closers, ensure margins are equal around door   | GP                               |   |
| 7                            | Check threshold is level and silicone seal is adequate   |                                  |   |
| 8                            | Check handles, locks, stops, letter plates are all fitted and operational  |                                  |   |
| 9                            | Check all external and internal pointing is satisfactory and installed in accordance with latest drawings (where applicable) |                                  | NO THRESHOLD FITTED   |
| Visual and Operational Check |  |                                  |   |
| 1                            | Remove labels and tapes as instructed by Main Contractor , check all packers are neatly trimmed back                         | GP                               | 18/04/17 JMAC   |
| 2                            | Check operation of door, locks, closers and all other components<br>Check door margins are even                              | GP                               |   |
| 3                            | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                      | GP                               |   |
| 4                            | Check glass is installed correctly and inspect to appropriate GGF criteria <b>ALL DAMAGE TO BE RECORDED</b>                  | GP                               | V   |
| 5                            | Inspect frames, channels, pressings and any other components. <b>ALL DAMAGE TO BE RECORDED</b>                               | GP                               |   |
| 6                            | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)      |                                  | AS NOTED  |
| 7                            | Install protection as specified in tender or as instructed by main contractor – <b>FINAL HANDOVER TO MAIN CONTRACTOR</b>     |                                  |   |

**COMMENTS**Please note any comments on reverse of sheet - Any defects or damage **MUST** be recorded

CHSL Sub-con: Name [REDACTED] Signature [REDACTED] Date \_\_\_\_\_

CHSL Manager: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Main Contractor: Name [REDACTED] Signature \_\_\_\_\_ Date 18/04/2017

IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE

**Project Name : RHSC & DCN**

Screen Ref: 67-00008

**AD : 4725**

١٨٦ : ٢١

| Item | Description of Works             | Comp |
|------|----------------------------------|------|
| 1    | THRESHOLD NOT FITTED             |      |
| 2    | DOOR LEAF NOT LEVEL ON MAIN LEAF |      |
| 3    | REMOVE LABELS FROM GLASS         |      |

Remedial works actioned and complete.

Name: \_\_\_\_\_

Date : \_\_\_\_\_

**Signed:**



# DOOR CHECK LIST

Site Name: RHSC & DCN

Main Contractor: Multiplex CE

AD: 4725

Door Ref: ED-00-008

Zone A

Level GF

| No                           | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check                               |
|------------------------------|--|----------------------------------|---|
| 1                            | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence        | CP                               | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE |
| 2                            | Check material specification, quality and quantity – report any issues   | CP                               |   |
| 3                            | Study drawings and building works before commencing installation   | CP                               |   |
| 4                            | Ensure handover is in place from Main Contractor   | CP                               |   |
| 5                            | Check accuracy of openings   | CP                               |   |
| Quality Check                |  |                                  |   |
| 1                            | Check head fixings, base fixings and if applicable mid fixings   | CP                               | <div>↑</div> <div>JMS</div> <div>↓</div>                                  |
| 2                            | Check height from datum, and position to gridline, confirm correct to latest drawings  | CP                               |   |
| 3                            | Check head and base for level plumb and square   | CP                               |   |
| 4                            | Check gaskets are installed in accordance with latest drawings   | CP                               |   |
| 5                            | Check glass is correctly seated on packers, spaced and all gaps are uniform  | CP                               |   |
| 6                            | Check hinges, pivots and closers, ensure margins are equal around door   | CP                               |   |
| 7                            | Check threshold is level and silicone seal is adequate   |                                  |   |
| 8                            | Check handles, locks, stops, letter plates are all fitted and operational  |                                  |   |
| 9                            | Check all external and internal pointing is satisfactory and installed in accordance with latest drawings (where applicable) |                                  |   |
| Visual and Operational Check |  |                                  | NOTE:   |
| 1                            | Remove labels and tapes as instructed by Main Contractor , check all packers are neatly trimmed back                         | CP                               | CHSC  |
| 2                            | Check operation of door, locks, closers and all other components   |                                  | REQUIRE   |
| 3                            | Check door margins are even  |                                  | TO COMPLETE   |
| 3                            | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                      | CP                               | <del>REPAIR</del>   |
| 4                            | Check glass is installed correctly and inspect to appropriate GGF criteria <b>ALL DAMAGE TO BE RECORDED</b>                  | CP                               | ABOVE   |
| 5                            | Inspect frames, channels, pressings and any other components. <b>ALL DAMAGE TO BE RECORDED</b>                               | CP                               | CORRECTING  |
| 6                            | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)      | CP                               | AS NOTED .  |
| 7                            | Install protection as specified in tender or as instructed by main contractor – <b>FINAL HANDOVER TO MAIN CONTRACTOR</b>     |                                  |   |

## COMMENTS

Please note any comments on reverse of sheet - Any defects or damage MUST be recorded

CHSL Sub-con: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

CHSL Manager: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Main Contractor: Name [REDACTED] Signature [REDACTED] Date 18/4/2017

IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE

Project Name : RHSC &amp; DCN

Screen Ref: 52-00-009

**$\overline{AD} : 4725$**

176

| Item | Description of Works                      | Comp |
|------|---|------|
| 1    | THRESHOLD NOT FITTED                      |      |
| 2    | DOOR LEAFS NOT LEVEL                      |      |
| 3    | REMOVE LABELS FROM GLASS                  |      |
| 4    | COSE MULLION WAS REQUIRED FOR AGE WIRING, |      |

Remedial works actioned and complete.

**Name:**

Date : \_\_\_\_\_

**Signed:**

# DOOR CHECK LIST

Site Name: RHSC & DCN

Main Contractor: Multiplex CE

AD: 4725

Door Ref: ED-00-010

Zone A

Level GF

| No                                  | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check                               |
|-------------------------------------|--|----------------------------------|---|
| 1                                   | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence        | GP                               | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE |
| 2                                   | Check material specification, quality and quantity – report any issues   | GP                               |   |
| 3                                   | Study drawings and building works before commencing installation   | GP                               |   |
| 4                                   | Ensure handover is in place from Main Contractor   | GP                               |   |
| 5                                   | Check accuracy of openings   | GP                               |   |
| <b>Quality Check</b>                |  |                                  |   |
| 1                                   | Check head fixings, base fixings and if applicable mid fixings   | GP                               | 18/4/2017   |
| 2                                   | Check height from datum, and position to gridline, confirm correct to latest drawings  | GP                               |   |
| 3                                   | Check head and base for level plumb and square   | GP                               |   |
| 4                                   | Check gaskets are installed in accordance with latest drawings   | GP                               |   |
| 5                                   | Check glass is correctly seated on packers, spaced and all gaps are uniform  | GP                               |   |
| 6                                   | Check hinges, pivots and closers, ensure margins are equal around door   | GP                               |   |
| 7                                   | Check threshold is level and silicone seal is adequate   | GP                               |   |
| 8                                   | Check handles, locks, stops, letter plates are all fitted and operational  | GP                               |   |
| 9                                   | Check all external and internal pointing is satisfactory and installed in accordance with latest drawings (where applicable) |                                  |   |
| <b>Visual and Operational Check</b> |  |                                  |   |
| 1                                   | Remove labels and tapes as instructed by Main Contractor, check all packers are neatly trimmed back                          | GP                               | AS NOTED.   |
| 2                                   | Check operation of door, locks, closers and all other components   | GP                               |   |
| 3                                   | Check door margins are even  | GP                               |   |
| 4                                   | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                      | GP                               |   |
| 5                                   | Check glass is installed correctly and inspect to appropriate GGF criteria <b>ALL DAMAGE TO BE RECORDED</b>                  | GP                               |   |
| 6                                   | Inspect frames, channels, pressings and any other components   | GP                               |   |
| 7                                   | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)      |                                  |   |
| 7                                   | Install protection as specified in tender or as instructed by main contractor – <b>FINAL HANDOVER TO MAIN CONTRACTOR</b>     |                                  |   |

**COMMENTS**

Please note any comments on reverse of sheet - Any defects or damage **MUST** be recorded

CHSL Sub-con: Name [REDACTED] Signature [REDACTED] Date 10/4/17

CHSL Manager: Name [REDACTED] Signature [REDACTED] Date [REDACTED]

Main Contractor: Name [REDACTED] Signature [REDACTED] Date 18/4/17

IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE



**Project Name : RHSC & DCN**

**AD : 4725**

Screen Ref: FD-00-010

187

| Item | Description of Works  | Comp |
|------|---|------|
| 1.   | CASKEIT NEEDS TIDY UP ON R/H LEAF   |      |
| 2.   | REMOVE LABELS FROM GLASS  |      |
| 3.   | CHSL TO REVIEW ALUMIN INTERFAC <del>REQUIREMENT</del><br>DISCUSSION ON SURFACE MOUNTED. |      |

**Remedial works actioned and complete.**

**Name :**

Date : \_\_\_\_\_

**Signed:**

# DOOR CHECK LIST

Site Name: RHSC & DCN

Main Contractor : Multiplex CE

AD: 4725

Door Ref: ED-00-015

Zone E

Level GF

| No                           | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check                               |
|------------------------------|--|----------------------------------|---|
| 1                            | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence        | CP                               | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE |
| 2                            | Check material specification, quality and quantity – report any issues   | CP                               |   |
| 3                            | Study drawings and building works before commencing installation   | CP                               |   |
| 4                            | Ensure handover is in place from Main Contractor   | CP                               |   |
| 5                            | Check accuracy of openings   | CP                               |   |
| Quality Check                |  |                                  |   |
| 1                            | Check head fixings, base fixings and if applicable mid fixings   | CP                               | ↑   |
| 2                            | Check height from datum, and position to gridline, confirm correct to latest drawings  | CP                               |   |
| 3                            | Check head and base for level plumb and square   | CP                               |   |
| 4                            | Check gaskets are installed in accordance with latest drawings   | CP                               |   |
| 5                            | Check glass is correctly seated on packers, spaced and all gaps are uniform  | CP                               |   |
| 6                            | Check hinges, pivots and closers, ensure margins are equal around door   | CP                               |   |
| 7                            | Check threshold is level and silicone seal is adequate   |                                  |   |
| 8                            | Check handles, locks, stops, letter plates are all fitted and operational  | CP                               |   |
| 9                            | Check all external and internal pointing is satisfactory and installed in accordance with latest drawings (where applicable) |                                  |   |
| Visual and Operational Check |  |                                  |   |
| 1                            | Remove labels and tapes as instructed by Main Contractor , check all packers are neatly trimmed back                         | CP                               | ✓ Jmac-1<br>AS NOTED  |
| 2                            | Check operation of door, locks, closers and all other components<br>Check door margins are even                              | CP                               |   |
| 3                            | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                      | CP                               |   |
| 4                            | Check glass is installed correctly and inspect to appropriate GGF criteria <b>ALL DAMAGE TO BE RECORDED</b>                  | CP                               |   |
| 5                            | Inspect frames, channels, pressings and any other components.<br><b>ALL DAMAGE TO BE RECORDED</b>                            | CP                               |   |
| 6                            | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)      |                                  |   |
| 7                            | Install protection as specified in tender or as instructed by main contractor – <b>FINAL HANDOVER TO MAIN CONTRACTOR</b>     |                                  |   |

## COMMENTS

Please note any comments on reverse of sheet - Any defects or damage **MUST** be recorded

CHSL Sub-con : Name [REDACTED] Signature [REDACTED] Date 10/4/17

CHSL Manager : Name [REDACTED] Signature [REDACTED] Date [REDACTED]

Main Contractor : Name [REDACTED] Signature [REDACTED] Date 18/4/2017

IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE

**Project Name : RHSC & DCN**

**AD : 4725**

187

Screen Ref: FD-00-015

[illegible]

Remedial works actioned and complete.

**Name :**

Date : \_\_\_\_\_

**Signed:**

# DOOR CHECK LIST

Site Name: RHSC & DCN

Main Contractor: Multiplex CE

AD: 4725

Door Ref: ED-00-016

Zone 12

Level GF

| No                           | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check                               |
|------------------------------|--|----------------------------------|---|
| 1                            | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence        | CP                               | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE |
| 2                            | Check material specification, quality and quantity – report any issues   | CP                               |   |
| 3                            | Study drawings and building works before commencing installation   | CP                               |   |
| 4                            | Ensure handover is in place from Main Contractor   | CP                               |   |
| 5                            | Check accuracy of openings   | CP                               |   |
| Quality Check                |  |                                  |   |
| 1                            | Check head fixings, base fixings and if applicable mid fixings   | CP                               | ↑   |
| 2                            | Check height from datum, and position to gridline, confirm correct to latest drawings  | CP                               |   |
| 3                            | Check head and base for level plumb and square   | CP                               |   |
| 4                            | Check gaskets are installed in accordance with latest drawings   | CP                               |   |
| 5                            | Check glass is correctly seated on packers, spaced and all gaps are uniform  | CP                               |   |
| 6                            | Check hinges, pivots and closers, ensure margins are equal around door   | CP                               |   |
| 7                            | Check threshold is level and silicone seal is adequate   |                                  |   |
| 8                            | Check handles, locks, stops, letter plates are all fitted and operational  | CP                               |   |
| 9                            | Check all external and internal pointing is satisfactory and installed in accordance with latest drawings (where applicable) |                                  |   |
| Visual and Operational Check |  |                                  |   |
| 1                            | Remove labels and tapes as instructed by Main Contractor , check all packers are neatly trimmed back                         | CP                               | ✓ S mac .1<br>AS NOTED  |
| 2                            | Check operation of door, locks, closers and all other components<br>Check door margins are even                              | CP                               |   |
| 3                            | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                      | CP                               |   |
| 4                            | Check glass is installed correctly and inspect to appropriate GGF criteria <b>ALL DAMAGE TO BE RECORDED</b>                  | CP                               |   |
| 5                            | Inspect frames, channels, pressings and any other components.<br><b>ALL DAMAGE TO BE RECORDED</b>                            | CP                               |   |
| 6                            | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)      |                                  |   |
| 7                            | Install protection as specified in tender or as instructed by main contractor – <b>FINAL HANDOVER TO MAIN CONTRACTOR</b>     |                                  |   |

## COMMENTS

Please note any comments on reverse of sheet - Any defects or damage **MUST** be recorded

CHSL Sub-con: Name [REDACTED] Signature [REDACTED] Date 10/4/17

CHSL Manager: Name [REDACTED] Signature [REDACTED] Date [REDACTED]

Main Contractor: Name [REDACTED] Signature [REDACTED] Date 18/4/2017

IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE

## Snagging List

**Project Name : RHSC & DCN**

Screen Ref: FD-00-016

**AD : 4725**

47

13

[illegible]

Remedial works actioned and complete.

**Name: \_\_\_\_\_**

Date : \_\_\_\_\_

**Signed:**

**Signed :** \_\_\_\_\_



# DOOR CHECK LIST

Site Name: RHSC & DCN

Main Contractor : Multiplex CE

AD: 4725

Door Ref : ED-00-021

Zone C

Level GF

| No                           | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check                               |
|------------------------------|--|----------------------------------|---|
| 1                            | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence        |                                  | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE |
| 2                            | Check material specification, quality and quantity – report any issues   |                                  |   |
| 3                            | Study drawings and building works before commencing installation   |                                  |   |
| 4                            | Ensure handover is in place from Main Contractor   |                                  |   |
| 5                            | Check accuracy of openings *   |                                  |   |
| Quality Check                |  |                                  |   |
| 1                            | Check head fixings, base fixings and if applicable mid fixings   |                                  | Door install OK 13/4<br>locked same                                       |
| 2                            | Check height from datum, and position to gridline, confirm correct to latest drawings  |                                  |   |
| 3                            | Check head and base for level plumb and square   |                                  |   |
| 4                            | Check gaskets are installed in accordance with latest drawings   |                                  |   |
| 5                            | Check glass is correctly seated on packers, spaced and all gaps are uniform  |                                  |   |
| 6                            | Check hinges, pivots and closers, ensure margins are equal around door   |                                  |   |
| 7                            | Check threshold is level and silicone seal is adequate   |                                  |   |
| 8                            | Check handles, locks, stops, letter plates are all fitted and operational  |                                  |   |
| 9                            | Check all external and internal pointing is satisfactory and installed in accordance with latest drawings (where applicable) |                                  |   |
| Visual and Operational Check |  |                                  |   |
| 1                            | Remove labels and tapes as instructed by Main Contractor, check all packers are neatly trimmed back                          |                                  | Door install OK 13/4<br>locked same                                       |
| 2                            | Check operation of door, locks, closers and all other components   |                                  |   |
| 3                            | Check door margins are even  |                                  |   |
| 4                            | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                      |                                  |   |
| 5                            | Check glass is installed correctly and inspect to appropriate GGF criteria ALL DAMAGE TO BE RECORDED                         |                                  |   |
| 6                            | Inspect frames, channels, pressings and any other components. ALL DAMAGE TO BE RECORDED                                      |                                  |   |
| 7                            | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)      |                                  |   |
| 7                            | Install protection as specified in tender or as instructed by main contractor – FINAL HANDOVER TO MAIN CONTRACTOR            |                                  |   |

## COMMENTS

Please note any comments on reverse of sheet - Any defects or damage **MUST** be recorded

CHSL Sub-con: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

CHSL Manager: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Main Contractor: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date 13/04/2017

IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE



**Project Name : RHSC & DCN**

Screen Ref: ED-00-021

17

**$\overline{AD} : 4725$**

[illegible]

Remedial works actioned and complete.

**Name :**

Date :

**Signed:**

**DOOR CHECK LIST**Site Name: RHSC & DCNMain Contractor: Multiplex CEAD: 4725Door Ref: FD-00-023Zone BLevel GF

| No                                  | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check                               |
|-------------------------------------|--|----------------------------------|---|
| 1                                   | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence        | GP ✓                             | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE |
| 2                                   | Check material specification, quality and quantity – report any issues   | GP ✓                             |   |
| 3                                   | Study drawings and building works before commencing installation   | GP ✓                             |   |
| 4                                   | Ensure handover is in place from Main Contractor   | GP ✓                             |   |
| 5                                   | Check accuracy of openings   | GP                               |   |
| <b>Quality Check</b>                |  |                                  |   |
| 1                                   | Check head fixings, base fixings and if applicable mid fixings   | ✓ GP                             | B 4<br>Same.  |
| 2                                   | Check height from datum, and position to gridline, confirm correct to latest drawings  | GP                               |   |
| 3                                   | Check head and base for level plumb and square   | ✓ GP                             |   |
| 4                                   | Check gaskets are installed in accordance with latest drawings   | ✓ GP                             |   |
| 5                                   | Check glass is correctly seated on packers, spaced and all gaps are uniform  | GP                               |   |
| 6                                   | Check hinges, pivots and closers, ensure margins are equal around door   | GP                               |   |
| 7                                   | Check threshold is level and silicone seal is adequate   |                                  |   |
| 8                                   | Check handles, locks, stops, letter plates are all fitted and operational  | GP                               |   |
| 9                                   | Check all external and internal pointing is satisfactory and installed in accordance with latest drawings (where applicable) |                                  |   |
| <b>Visual and Operational Check</b> |  |                                  |   |
| 1                                   | Remove labels and tapes as instructed by Main Contractor, check all packers are neatly trimmed back                          | GP                               | EPPM MASTIC ON PUSIT BAR  |
| 2                                   | Check operation of door, locks, closers and all other components. Check door margins are even                                | GP                               |   |
| 3                                   | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                      | GP                               |   |
| 4                                   | Check glass is installed correctly and inspect to appropriate GGF criteria <b>ALL DAMAGE TO BE RECORDED</b>                  | GP                               |   |
| 5                                   | Inspect frames, channels, pressings and any other components. <b>ALL DAMAGE TO BE RECORDED</b>                               | GP                               |   |
| 6                                   | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)      |                                  |   |
| 7                                   | Install protection as specified in tender or as instructed by main contractor – <b>FINAL HANDOVER TO MAIN CONTRACTOR</b>     |                                  |   |

**COMMENTS**Please note any comments on reverse of sheet - Any defects or damage **MUST** be recordedCHSL Sub-con: Name [REDACTED] Signature [REDACTED] Date 10/4/2012CHSL Manager: Name [REDACTED] Signature [REDACTED] Date [REDACTED]Main Contractor: Name [REDACTED] Signature [REDACTED] Date 13/4/2012

IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE

**Project Name : RHSC & DCN**

**AD : 4725**

Elevation: 42-00223

17

79

| Item | Description of Works                  | Comp |
|------|---------------------------------------|------|
| 1    | INSERT LUGS WHERE SPACE EXCEEDS 450MM |      |
| 2    | REMAINE PROTECTIVE FRUIT PANIC BAR    |      |
| 3    | FIX THRESHOLD MAX CTRS                |      |

Remedial works actioned and complete.

**Name :**

Date: \_\_\_\_\_

**Signed:**

# DOOR CHECK LIST

Site Name: RHSC & DCN

Main Contractor: Multiplex CE

AD: 4725

Door Ref: ED 00-050

Zone C

Level CF

| No | Prestart Checks  | Sub-contractor and Henshaw Check | Main Contractor, Manager / Supervisor Check                               |
|----|--|----------------------------------|---|
| 1  | Ensure Method Statements and Risks Assessments are read and fully understood – Registers signed before works commence        | CP                               | IF ANY ISSUES ARE FOUND IN PRESTART CHECKS INSTALLATION MUST NOT CONTINUE |
| 2  | Check material specification, quality and quantity – report any issues   | GP                               |   |
| 3  | Study drawings and building works before commencing installation   | GP                               |   |
| 4  | Ensure handover is in place from Main Contractor   | GP                               |   |
| 5  | Check accuracy of openings   | GP                               |   |
|    | Quality Check  |                                  |   |
| 1  | Check head fixings, base fixings and if applicable mid fixings   | CP                               | ↑   |
| 2  | Check height from datum, and position to gridline, confirm correct to latest drawings  | CP                               |   |
| 3  | Check head and base for level plumb and square   | CP                               |   |
| 4  | Check gaskets are installed in accordance with latest drawings   | CP                               |   |
| 5  | Check glass is correctly seated on packers, spaced and all gaps are uniform  | CP                               |   |
| 6  | Check hinges, pivots and closers, ensure margins are equal around door   | CP                               |   |
| 7  | Check threshold is level and silicone seal is adequate   | CP                               |   |
| 8  | Check handles, locks, stops, letter plates are all fitted and operational  | CP                               |   |
| 9  | Check all external and internal pointing is satisfactory and installed in accordance with latest drawings (where applicable) | CP                               |   |
|    | Visual and Operational Check   |                                  |   |
| 1  | Remove labels and tapes as instructed by Main Contractor , check all packers are neatly trimmed back                         | CP                               | ↓<br>Signed 18/04<br><br>AS NOTED SURE                                    |
| 2  | Check operation of door, locks, closers and all other components<br>Check door margins are even                              | CP                               |   |
| 3  | Check all glass is cleaned of silicone and glue residue, and is suitable for inspection                                      | CP                               |   |
| 4  | Check glass is installed correctly and inspect to appropriate GGF criteria <b>ALL DAMAGE TO BE RECORDED</b>                  | CP                               |   |
| 5  | Inspect frames, channels, pressings and any other components. <b>ALL DAMAGE TO BE RECORDED</b>                               | CP                               |   |
| 6  | Check all silicone seals are installed correctly and to acceptable standard - (note any deformations or gaps in joints)      |                                  |   |
| 7  | Install protection as specified in tender or as instructed by main contractor – <b>FINAL HANDOVER TO MAIN CONTRACTOR</b>     |                                  |   |

**COMMENTS**

Please note any comments on reverse of sheet - Any defects or damage **MUST** be recorded

CHSL Sub-con: Name [REDACTED] Signature [REDACTED] Date 10/4/2017

CHSL Manager: Name [REDACTED] Signature [REDACTED] Date [REDACTED]

Main Contractor: Name [REDACTED] Signature [REDACTED] Date 18/4/2017

IF CHECKLIST IS NOT RETURNED WITHIN 3 WORKING DAYS, THESE WORKS ARE TO BE CONSIDERED ACCEPTABLE AND DEFECT FREE

**Project Name : RHSC & DCN**

Screen Ref: 50-00-050

**$\overline{AD} : 4725$**

17

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| Item | Description of Works | Comp |
|------|----------------------|------|
| L    | RPM NOT COMPLETE     |      |

Remedial works actioned and complete.

Name :

Date : \_\_\_\_\_

**Signed:**

















9B.

ETFE ROOF







REFER TO DR-607 FOR ETFE PILLOW ROOF1 FABRICATION DRAWINGS.  
REFER TO DR-657 FOR ETFE PILLOW ROOF2 FABRICATION DRAWINGS.

|                                |                      |                        |          |
|--------------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH        | PROJECT REF: 10-6122 | HANDOVER DATE: 22-9-16 | Cert No: |
| PACKAGE: ETRC Pillars 1 Roof 2 |                      |                        |          |

|  |
|--|
| HANDOVER DESCRIPTION:                      |
| ETRC Pillars installed clean and undamaged |

We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|   |
|---|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, Non-Conformance reports raised etc): |
| Capping substructure and bradvice still to be installed   |

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|      |         |                              |
|------|---------|------------------------------|
| Date | 22-9-16 | for NovumStructures (UK) Ltd |
| Date |         | for                          |

(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)

Novum Structures UK Ltd  
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F +44 (0) 1379 640311  
www.novumstructures.com  
NUK/PM/12a





|                               |                      |                        |          |
|-------------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH       | PROJECT REF: 10-6122 | HANDOVER DATE: 22-9-16 | Cert No: |
| PACKAGE: ETRC P.110w 2 Deck 2 |                      |                        |          |

HANDOVER DESCRIPTION:

ETRC P.110w installed clear and undamaged

We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below


APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER:

FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, Non-Conformance reports raised etc):

Capping Rubble-pore And Biadwice still to be installed

ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING.

PLEASE SIGN FOR ACCEPTANCE OF WORKS

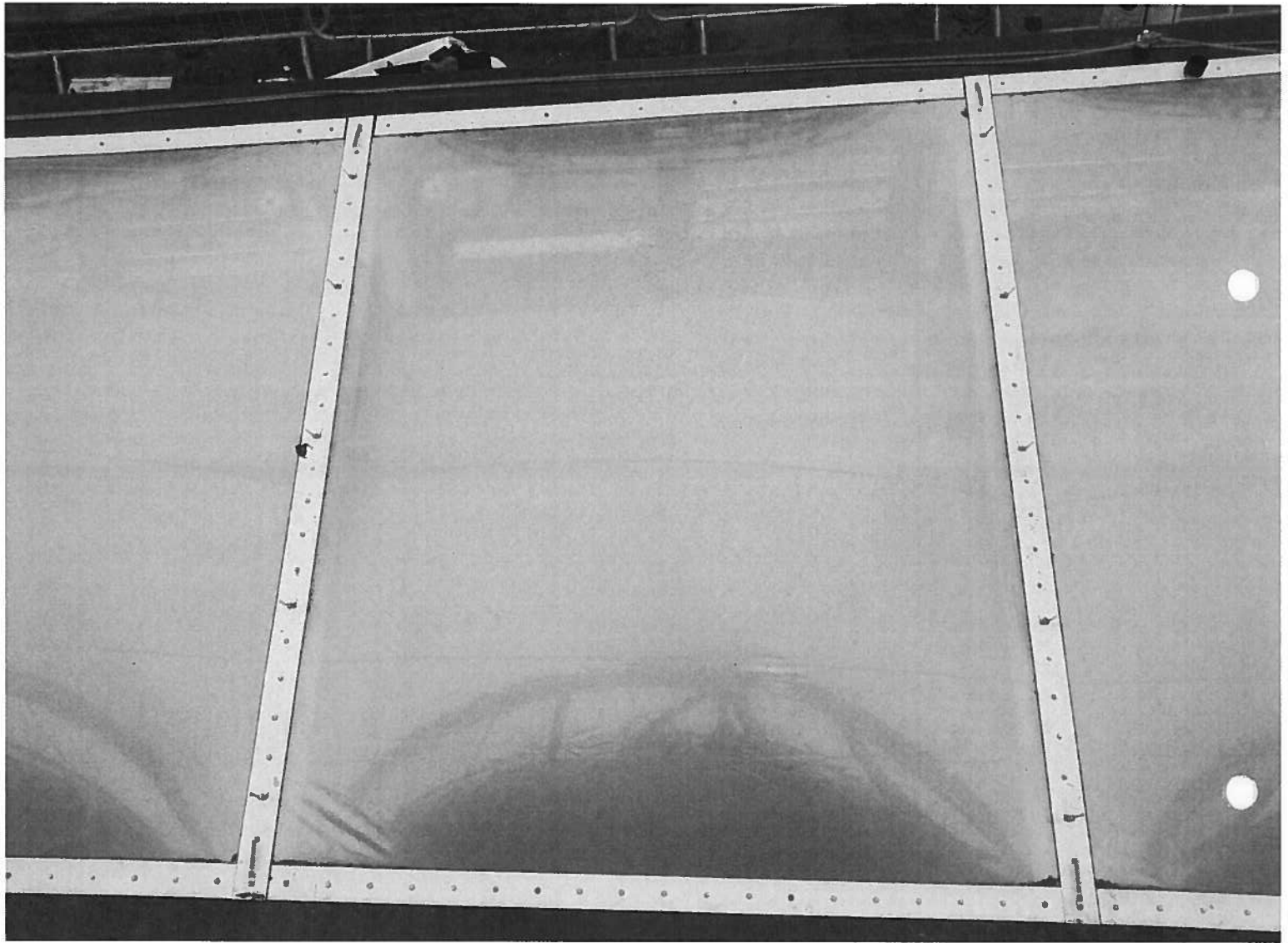
|                 |  |                              |
|-----------------|--|------------------------------|
| Date<br>22-9-16 |  | for NovumStructures (UK) Ltd |
| Date            | Signed & Print name  | for                          |

(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)

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|                               |                      |                        |          |
|-------------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH       | PROJECT REF: 10-6122 | HANDOVER DATE: 22-9-16 | Cert No: |
| PACKAGE: ETRC Pillar 3 Loop 3 |                      |                        |          |

|   |
|---|
| HANDOVER DESCRIPTION:   |
| ETRC Pillar installed clear and undamaged   |
| We hereby confirm handover of completed works as identified above to the above project.<br>The identified area of work is intact and without damage. See also notes below |
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER:   |

|   |
|---|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, Non-Conformance reports raised etc): |
| Capping Abbaa - photo and Evidence still to be installed  |

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

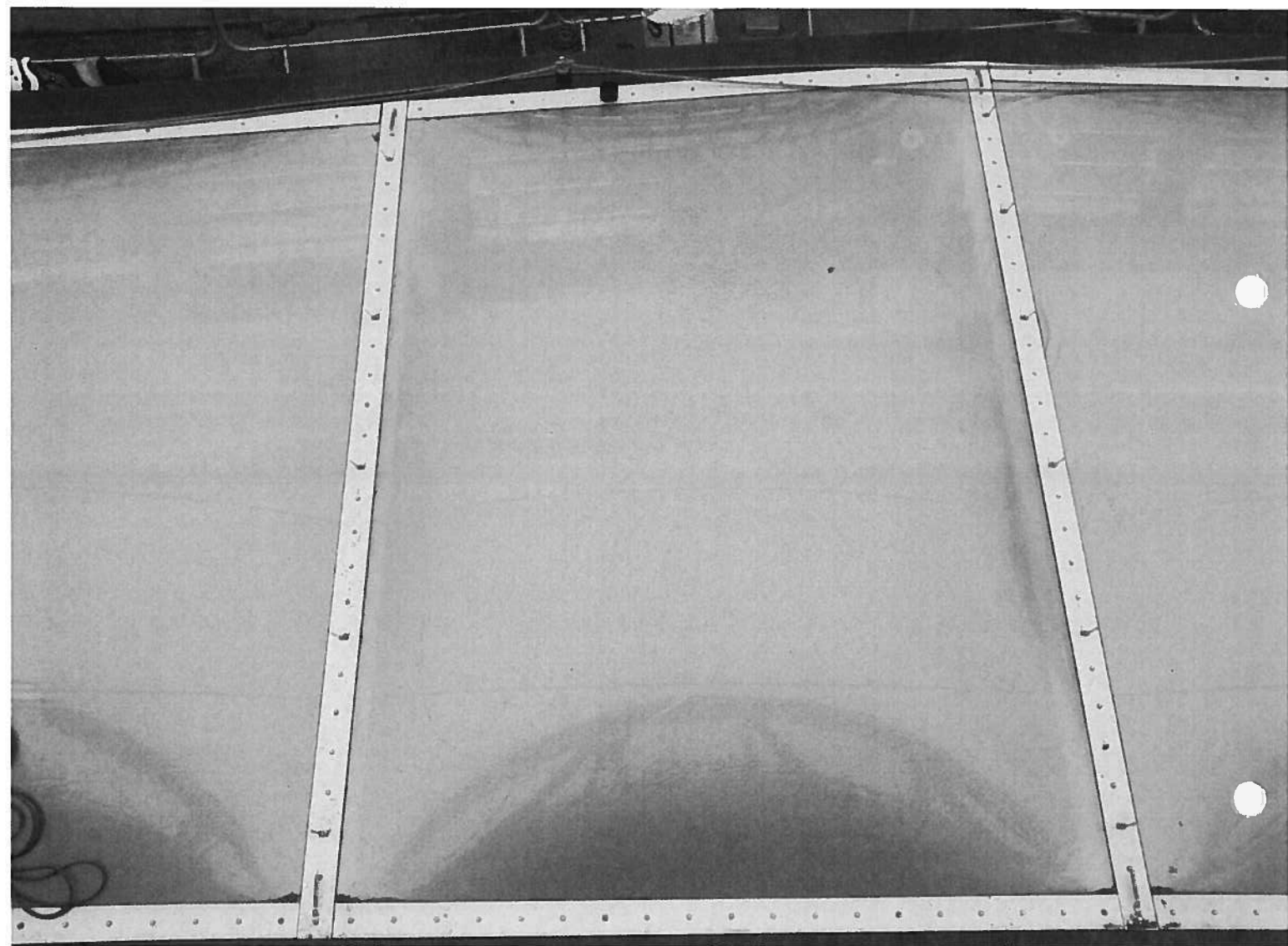
PLEASE SIGN FOR ACCEPTANCE OF WORKS

|      |         |                       |            |                              |
|------|---------|-----------------------|------------|------------------------------|
| Date | 22-9-16 | Signed & Printed Name | [Redacted] | for NovumStructures (UK) Ltd |
| Date |         | Signed & Print name   |            | for                          |

(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)

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|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 22-9-16 | Cert No: |
|-------------------------|----------------------|------------------------|----------|

PACKAGE:

ETRE Piliow 4 - Roof 2

HANDOVER DESCRIPTION :

ETRE Piliow Installed clean And undamaged


We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below

APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER:

FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, Non-Conformance reports raised etc):  
Coping Rubra - gate And ISADUINE STILL TO BE installed

ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING.

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                     |  |                              |
|---------------------|--|------------------------------|
| Date<br>22-9-16     |  | for NovumStructures (UK) Ltd |
| Signed & Print name |  | for                          |

(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)





Use this certificate for handing over areas of works during phased construction programme

|                              |                      |                        |          |
|------------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH      | PROJECT REF: 10-6122 | HANDOVER DATE: 22-9-16 | Cert No: |
| PACKAGE: EDE Pileas - Road 2 |                      |                        |          |

HANDOVER DESCRIPTION :

EDE Piles installed clean and undamaged

We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below

APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER:

FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, Non-Conformance reports raised etc):  
Capping Rubber - plate had isolate still to be installed

ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING.

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|      |  |                              |
|------|--|------------------------------|
| Date | 22-9-16  | for NovumStructures (UK) Ltd |
| Date |  | for                          |

(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)



|                                  |                      |                        |          |
|----------------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH          | PROJECT REF: 10-6122 | HANDOVER DATE: 22-9-16 | Cert No: |
| PACKAGE: ETOE Pillars 6 - Roof 2 |                      |                        |          |

HANDOVER DESCRIPTION :

ETOE Pillars installed clear and undamaged

We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below

APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER:

FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, Non-Conformance reports raised etc):

Approved Ribbon - Gate And Roadside still to be installed

ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING.

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|         |  |                              |
|---------|--|------------------------------|
| Date    |  | for NovumStructures (UK) Ltd |
| 22-9-16 |  |                              |
| Date    |  | for                          |
|         |  |                              |

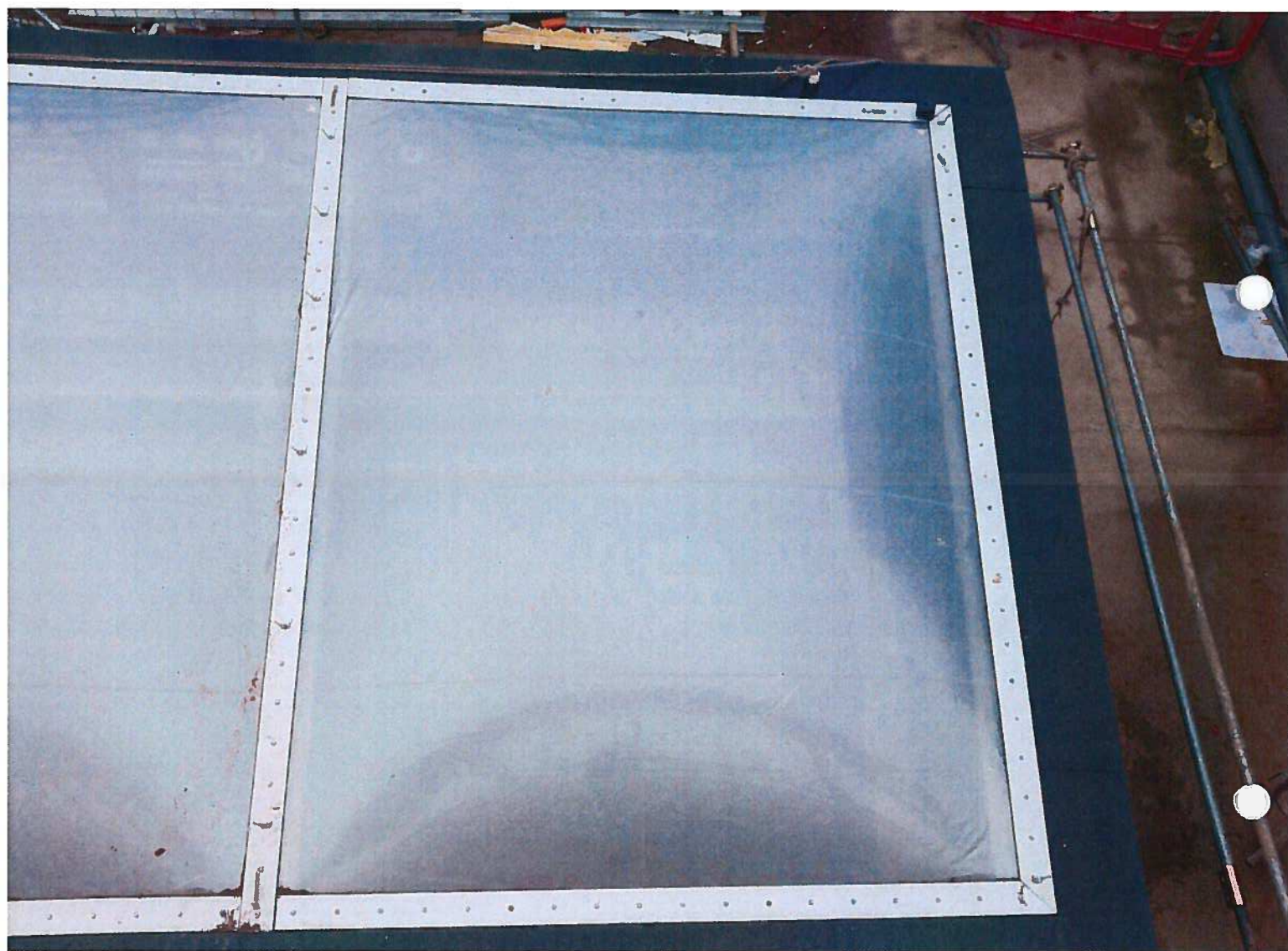
(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)

Novum Structures UK Ltd

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T +44 (0) 1379 640040  
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www.novumstructures.com  
NUK/PM/12a



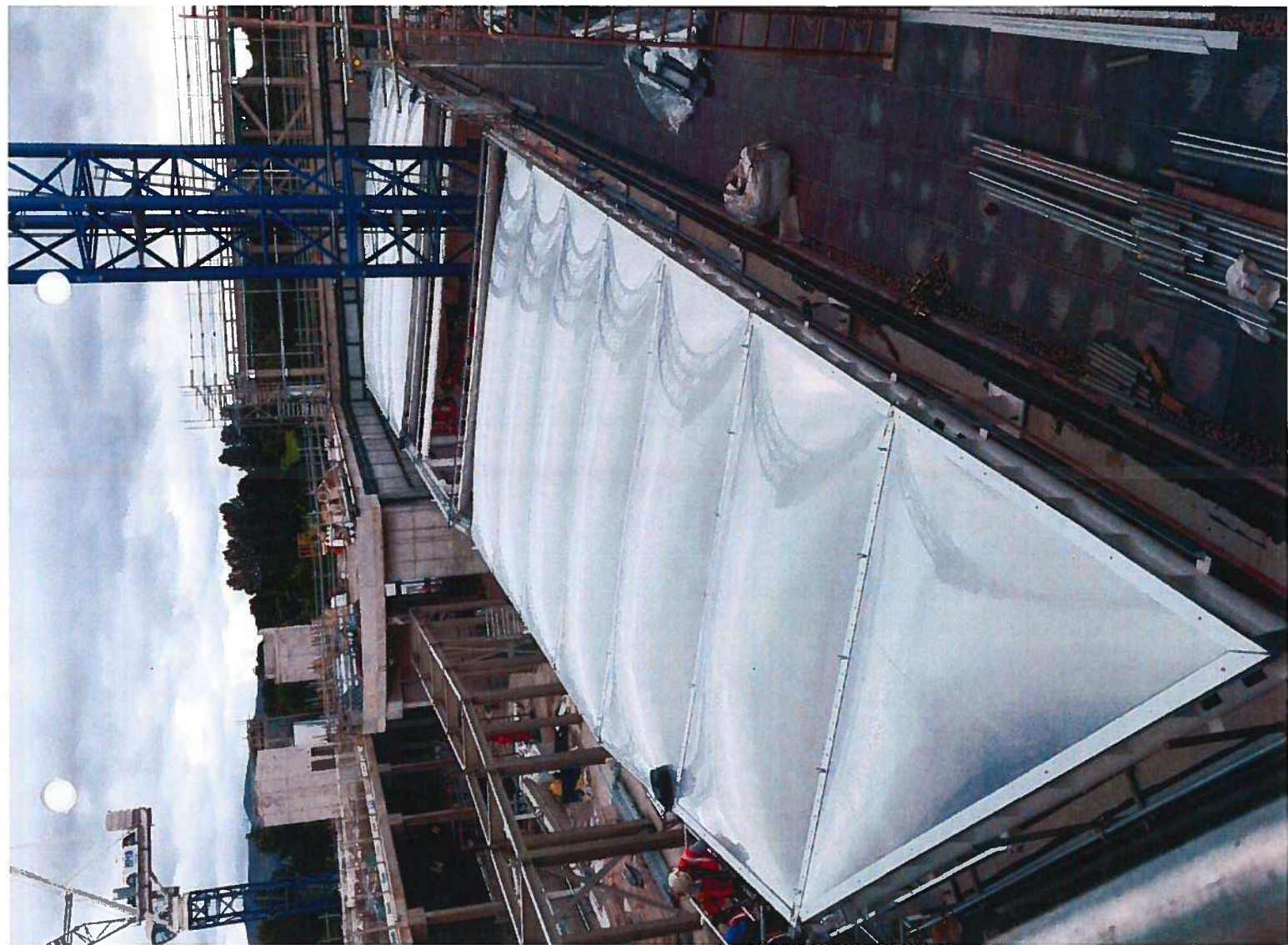














Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
| PACKAGE: ETPRE SYSTEM   |                      |                        |          |


|   |            |
|---|------------|
| HANDOVER DESCRIPTION :  | (Pillow 1) |
| ETPRE Pillow Installed clean And undamaged  |            |
| <i>We hereby confirm handover of completed works as identified above to the above project.<br/>The identified area of work is intact and without damage. See also notes below</i> |            |

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|  |
|--|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, None- Conformance reports raised etc) : |
| Birdwire still to be installed around the perimeter  |

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                 |  |                              |
|-----------------|--|------------------------------|
| Date<br>29-7-16 | Signed & Print Name<br> | for NovumStructures (UK) Ltd |
| Date            | Signed & Print name  | for                          |

(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)

Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
| PACKAGE: E.T.R.E SYSTEM |                      |                        |          |


|   |
|---|
| HANDOVER DESCRIPTION : (Pillow 2)<br>E.T.R.E Pillow Installed clean And unchanged   |
| <i>We hereby confirm handover of completed works as identified above to the above project.<br/>The identified area of work is intact and without damage. See also notes below</i> |

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|  |
|--|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, None- Conformance reports raised etc):<br>Birdwise still to be installed Around The per'match |
|--|

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                 |  |                              |
|-----------------|--|------------------------------|
| Date<br>29-7-16 | Signed & Print Name<br> | for NovumStructures (UK) Ltd |
| Date            | Signed & Print name  | for                          |

(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)



Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
| PACKAGE: E.T.P.E SYSTEM |                      |                        |          |

HANDOVER DESCRIPTION:

E.T.P.E Pillow Installed clean And undamaged (Pillow 3)

*We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below*


APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER:

FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, Non-Conformance reports raised etc):

Bridewire still to be installed around the perimeter

ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING.

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                 |   |                              |
|-----------------|---|------------------------------|
| Date<br>29-7-16 |  | for NovumStructures (UK) Ltd |
| Date            | Signed & Print name   | for                          |

*(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)*

Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
|-------------------------|----------------------|------------------------|----------|

|                            |
|----------------------------|
| PACKAGE:<br>E.T.R.E SYSTEM |
|----------------------------|

|   |
|---|
| HANDOVER DESCRIPTION :<br>E.T.R.E Pillow Installed clean And unchanged (Pillow 4) |
|---|


*We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below*

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|  |
|--|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, None- Conformance reports raised etc):<br>Birdwire still to be installed Around the perimeter |
|--|

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                 |   |                              |
|-----------------|---|------------------------------|
| Date<br>29-7-16 |  | for NovumStructures (UK) Ltd |
| Date            | Signed & Print name   | for                          |

*(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)*



Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
| PACKAGE: E.T.R.E SYSTEM |                      |                        |          |

|   |
|---|
| HANDOVER DESCRIPTION :                                  |
| E.T.R.E Pillow Installed clean And unbragged (Pillow 5) |


*We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below*

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|  |
|--|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, None- Conformance reports raised etc) : |
| Bracewire ST.11 To Be Installed Around The perimeter   |

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                 |  |                              |
|-----------------|--|------------------------------|
| Date<br>29-7-16 | Signed & Print Name<br> | for NovumStructures (UK) Ltd |
| Date            | Signed & Print name  | for                          |

*(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)*

Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
| PACKAGE: E.T.P.E System |                      |                        |          |

|  |             |
|--|-------------|
| HANDOVER DESCRIPTION :                       | (Pillar 11) |
| E.T.P.E Pillar installed clean and undamaged |             |

*We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below*

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|  |
|--|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, None- Conformance reports raised etc) : |
| Birdwire ST.11 To Be installed Around The perimeter  |

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|         |                      |                              |
|---------|----------------------|------------------------------|
| Date    | Signed & Print name  | for NovumStructures (UK) Ltd |
| 29-7-16 | [Redacted Signature] |                              |
| Date    | Signed & Print name  | for                          |
|         |                      |                              |

*(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)*



Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
| PACKAGE: E.T.P.E SYSTEM |                      |                        |          |

|  |
|--|
| HANDOVER DESCRIPTION : (Pillow 12)<br>E.T.P.E Pillow Installed clean And unchanged |
|--|


*We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below*

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|   |
|---|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, None- Conformance reports raised etc) :<br>Bridwire still to be installed around the perimeter |
|---|

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                 |  |                              |
|-----------------|--|------------------------------|
| Date<br>29-7-16 | Signed & Print Name<br> | for NovumStructures (UK) Ltd |
| Date            | Signed & Print name  | for                          |

*(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)*

Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
|-------------------------|----------------------|------------------------|----------|

|                         |
|-------------------------|
| PACKAGE:<br>ET&E System |
|-------------------------|

|   |
|---|
| HANDOVER DESCRIPTION :<br>ET&E Pillow Installed clean And undamaged (Pillow 13) |
|---|

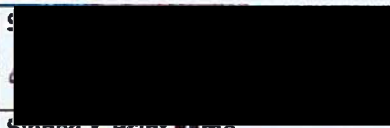
*We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below*

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|  |
|--|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, None- Conformance reports raised etc) :<br>Birdwire still to be installed Around Tree perimeter |
|--|

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                 |   |                              |
|-----------------|---|------------------------------|
| Date<br>29-7-16 |  | for NovumStructures (UK) Ltd |
| Date            | Signed & Print name   | for                          |

*(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)*



Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
| PACKAGE: E.T.P.E System |                      |                        |          |

|  |
|--|
| HANDOVER DESCRIPTION : (Pillar 14)<br>E.T.P.E Pillar installed clean and undamaged |
|--|


*We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below*

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|  |
|--|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, None- Conformance reports raised etc) :<br>Bridewire ST.11 To Be installed Around The Perimeter |
|--|

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                 |  |                              |
|-----------------|--|------------------------------|
| Date<br>29-7-16 | Signed & Print name<br> | for NovumStructures (UK) Ltd |
| Date            | Signed & Print name  | for                          |

*(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)*

Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
| PACKAGE: E.T.P.E System |                      |                        |          |

|  |             |
|--|-------------|
| HANDOVER DESCRIPTION :                       | (Pillar 15) |
| E.T.P.E Pillar Installed clean And undamaged |             |


We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|  |
|--|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, None- Conformance reports raised etc) : |
| Redwire ST. 11 TO BE INSTALLED Around The perimeter  |

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                 |  |                              |
|-----------------|--|------------------------------|
| Date<br>29-7-16 | Signed & Print Name<br> | for NovumStructures (UK) Ltd |
| Date            | S  | for                          |

(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)



Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
| PACKAGE: E.T.P.C SYSTEM |                      |                        |          |

|   |
|---|
| HANDOVER DESCRIPTION :                                      |
| (P.16.16)<br>E.T.P.C P.16.16 installed clear Area unchanged |


We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|  |
|--|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, None- Conformance reports raised etc) : |
| Bracing ST.11 To Be installed around perimeter   |

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                 |  |                              |
|-----------------|--|------------------------------|
| Date<br>29-7-16 | Signed & Print Name<br> | for NovumStructures (UK) Ltd |
| Date            |  | for                          |

(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)

Use this certificate for handing over areas of works during phased construction programme

|                         |                      |                        |          |
|-------------------------|----------------------|------------------------|----------|
| PROJECT: RHSC EDINBURGH | PROJECT REF: 10-6122 | HANDOVER DATE: 29-7-16 | Cert No: |
| PACKAGE: E.T.R.E System |                      |                        |          |

|  |
|--|
| HANDOVER DESCRIPTION :<br>ETRE Pillow installed close and undamaged<br>(Pillow 17) |
|--|


We hereby confirm handover of completed works as identified above to the above project.  
The identified area of work is intact and without damage. See also notes below

|   |
|---|
| APPENDED DOCUMENTS IN REFERENCE TO THIS HANDOVER: |
|---|

|   |
|---|
| FURTHER INFORMATION (e.g. Notes/Comments, Deviations from contract requirements, None- Conformance reports raised etc):<br>3 windows still to be installed around the perimeter |
|---|

|  |
|--|
| ANY NOTES RELEVANT TO THE WORKS MUST TO BE MADE IN THE BOX PRIOR TO SIGNING. |
|--|

PLEASE SIGN FOR ACCEPTANCE OF WORKS

|                 |  |                              |
|-----------------|--|------------------------------|
| Date<br>29-7-16 | Signed & Print Name<br> | for NovumStructures (UK) Ltd |
| Date            | Signed & Print name  | for                          |

(Note - Should this document not be signed or returned within a period of 7 days it will be deemed as being accepted without client signature)



9B6.

Roofworks.



## Quality Check Sheet for PermaTec Hot Mel Roof System

**SITE: Edinburgh RHSC&DCN**

|                                 |   |                 |                    |
|---------------------------------|---|-----------------|--------------------|
| <b>Element Description:</b>     | Weather proofing                            | <b>Site:</b>    | Edinburgh RHSC&DCN |
| <b>Description of Activity:</b> | PermaTec hot melt roof with Ballast & Slabs | <b>Project:</b> | R2635              |
| <b>Contractor Name:</b>         | Topek                                       |                 |                    |
| <b>Client Name:</b>             | BMCE  |                 |                    |
| <b>Time of Inspection(s):</b>   | As works progress                           |                 |                    |
| <b>Location of Inspection:</b>  | AR4 Roof                                    |                 |                    |

**Criteria for Inspection:**

Please see below for the following checks during installation

**Review Code Key:**

- ✓ = Complete & Satisfactory  
U = Unsatisfactory (Raise NCR)

| Item Description<br><small>NOTE: The items below are the minimum required standard, other specific check maybe required from criteria listed.</small>                                   | Topek    |        | Brookfield  |        | Comments |
|---|----------|--------|-------------|--------|----------|
|   | Date     | Signed | Review Code | Signed |          |
| 1. Drawing & Spec available   |          |        |             |        |          |
| 2. Concrete slab cleared of debris and dust   | 18/5/16  |        | ✓           |        |          |
| 3. Concrete slab primed with Permatex high penetration primer   | 18/5/16  |        | ✓           |        |          |
| Installation of rain water outlets and soil vent pipe sleeves   | 20/5/16  |        | ✓           |        |          |
| 5. Installation of 2 layers of 3mm Permatex Ecowrap hot melt incorporating PermaGuard-F polyester reinforcement covered by PermaGuard-M 4mm protection sheet felt 100mm side & end laps | 01/06/16 |        | ✓           |        |          |
| 6. Spot-check on completion for damage / defects  | 03/6/16  |        | ✓           |        |          |
| 7. JHH Engineering Electronic integrity test  | 03/6/16  |        | ✓           |        |          |
| 8. Installation of 2 layers of Knauf polystyrene insulation to achieve 220mm thickness  | 30/6/16  |        |             |        |          |
| 9. Installation of vapour permeable filter sheet  | 30/6/16  |        |             |        |          |
| 10. Installation of minimum 50mm deep River washed ballast as per roof plan   | 30/6/16  |        |             |        |          |
| 11. Installation of 600x600x50 concrete paving slab on 15 mm support pads   | 01/07/16 |        |             |        |          |
| 12. Area cleaned and clear of materials/debris  | 11/7/16  |        |             |        |          |



**Topek Construction Final Sign Off**

Site Representative:

Signature:

Date:

**BMCE Final Sign Off**

Site Representative:

Signature:

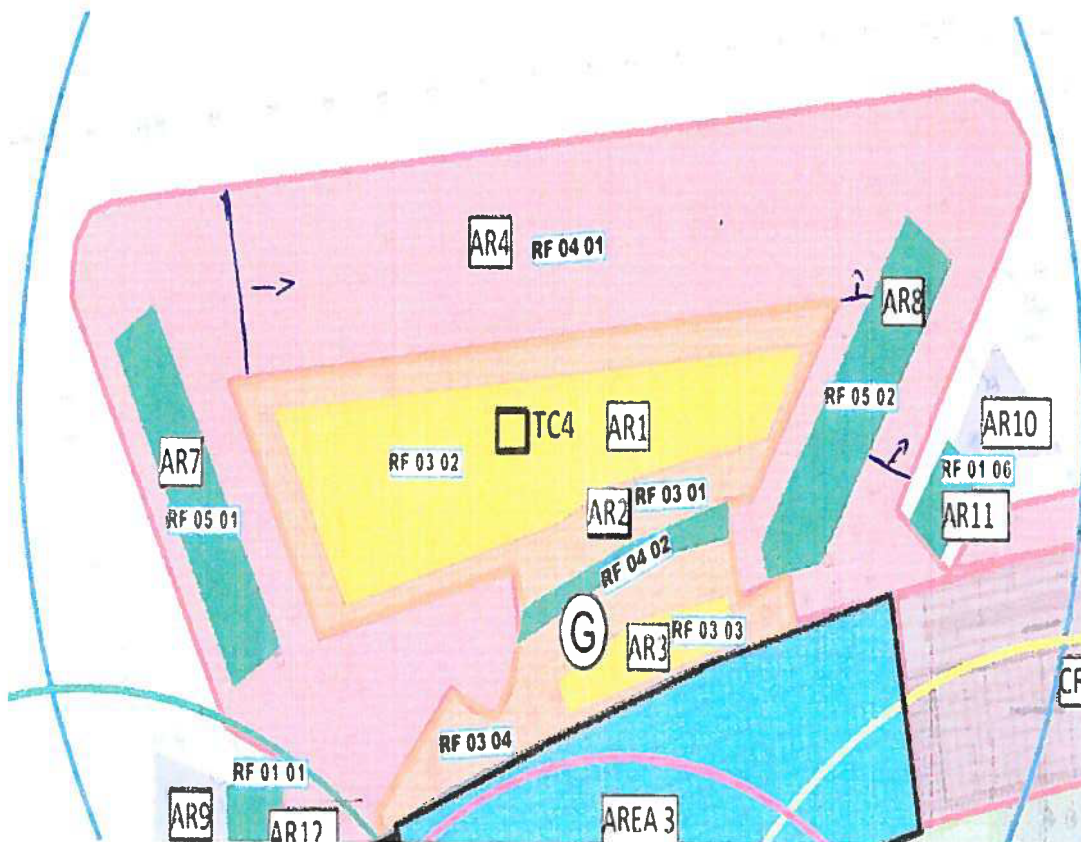
Date: 11/7/16

NCR's Raised:

EXACT AREA TO BE DETERMINED -

**Distribution:** Maintain file on site for originals

**Roof Plan**



## Quality checks AR4



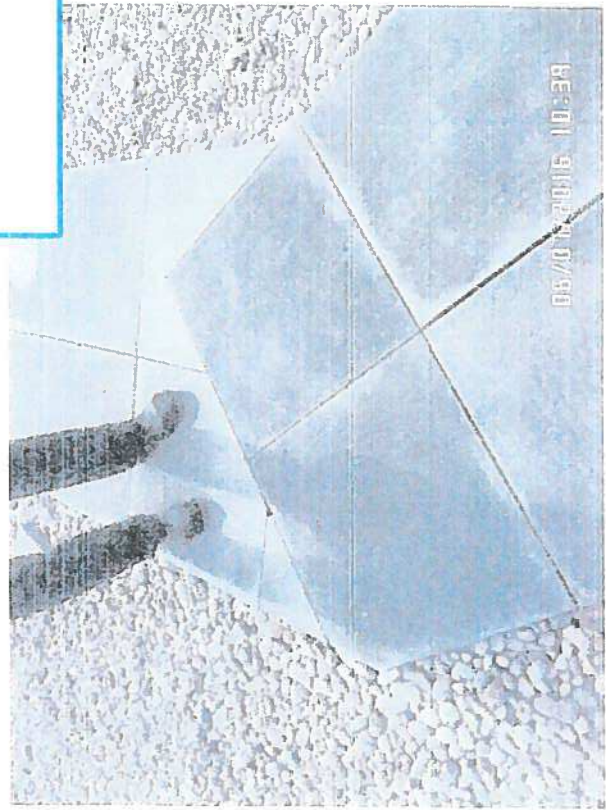
AR4 roof , peel test conducted  
wednesday 18/05/16 David M  
witness. Works in progress





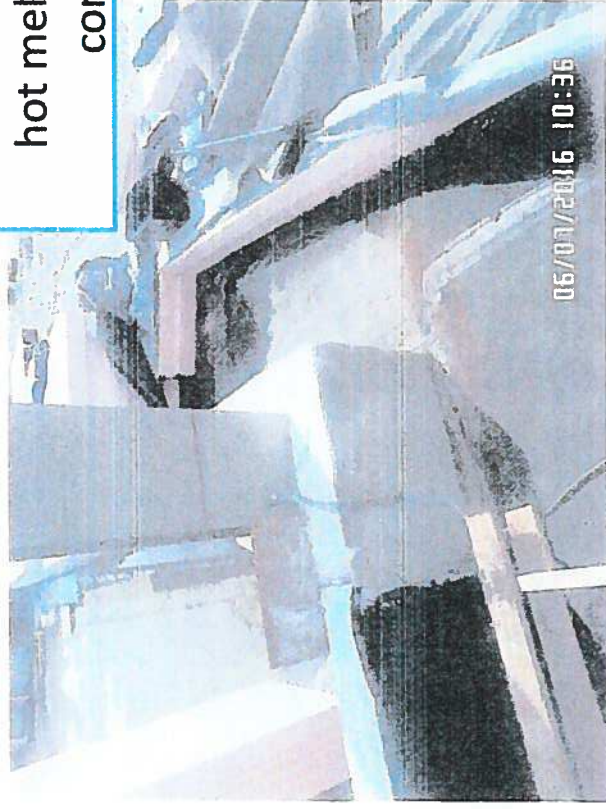


Installation of roof finishes





Areas left exposed where  
hot melt couldn't be  
completed



Slabs and ballast installed  
on roof



## Quality Check Sheet IKO Armourplan Single-Ply Roof System

**SITE: RHSC EDINBURGH**

|                                 |                                  |                 |                |
|---------------------------------|----------------------------------|-----------------|----------------|
| <b>Element Description:</b>     | Armourplan Weather proofing      | <b>Site:</b>    | RHSC Edinburgh |
| <b>Description of Activity:</b> | Single-ply Membrane Installation | <b>Project:</b> | R2635          |
| <b>Contractor Name:</b>         | Topek                            |                 |                |
| <b>Client Name:</b>             | BMCE                             |                 |                |
| <b>Date of Inspection(s):</b>   | As works progress                |                 |                |
| <b>Location of Inspection:</b>  | AR8                              |                 |                |

**Criteria for Inspection:**

Please see below for the following checks during installation

**Review Code Key:**

- ✓ = Complete & Satisfactory  
U = Unsatisfactory (Raise NCR)

| Item Description<br><small>NOTE: The items below are the minimum required standard, other specific check maybe required from criteria listed.</small>   | Topek    |        | Brookfield  |        | Comments |
|---|----------|--------|-------------|--------|----------|
|   | Date     | Signed | Review Code | Signed |          |
| 1. Drawing & Spec available   | 25/02/16 |        |             |        |          |
| 2. Installation of Decking D100 sheets following manufacturer's specs; 1no. LS25G16 tek screw fixing per trough at end laps and 1no every other trough at intermediate supports   | 10/08/16 |        |             |        |          |
| 3. Installation of 12mm plywood fixed to steel decking with CWS 5x40 fixings at 600 centres   | 12/08/16 |        |             |        |          |
| 4. VCL Spectravap self-adhesive 100mm side laps & 150mm end laps.   | 13/08/16 |        |             |        |          |
| 5. Installation of 1 layers of insulation 150mm mechanically fixed with minimum 6no fastener as per Topek approved drawings and manufactures spec   | 13/08/16 |        |             |        |          |
| 6. Installation of 1.2mm Armourplan RAL 7015 Membrane single ply membrane with minimum 100mm side lap and 150mm head lap, Fixed as per Topek approved drawings and manufactures spec and welded with hot-air to achieve waterproofing | 17/08/16 |        |             |        |          |
| 7. Gutters installed to purlins, check alignments.  | 17/08/16 |        |             |        |          |
| 8. Installation of Armourplan walkway   | 15/09/16 |        |             |        |          |
| 9. Installation of man safe system  | 14/09/16 |        |             |        |          |
| 10. Installation of outlets and leaf guards   | 17/08/16 |        |             |        |          |

|   |          |                    |  |
|---|----------|--------------------|--|
| 11. Spot-check on completion for damage / defects | 20/09/16 | <i>[Signature]</i> |  |
| 12. Area cleaned and clear of materials/debris    | 20/09/16 | <i>[Signature]</i> |  |
| 13. JHH Engineering Electronic integrity test     | 01/09/16 | <i>[Signature]</i> |  |

**Topek Construction Final Sign Off**

Site Representative: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

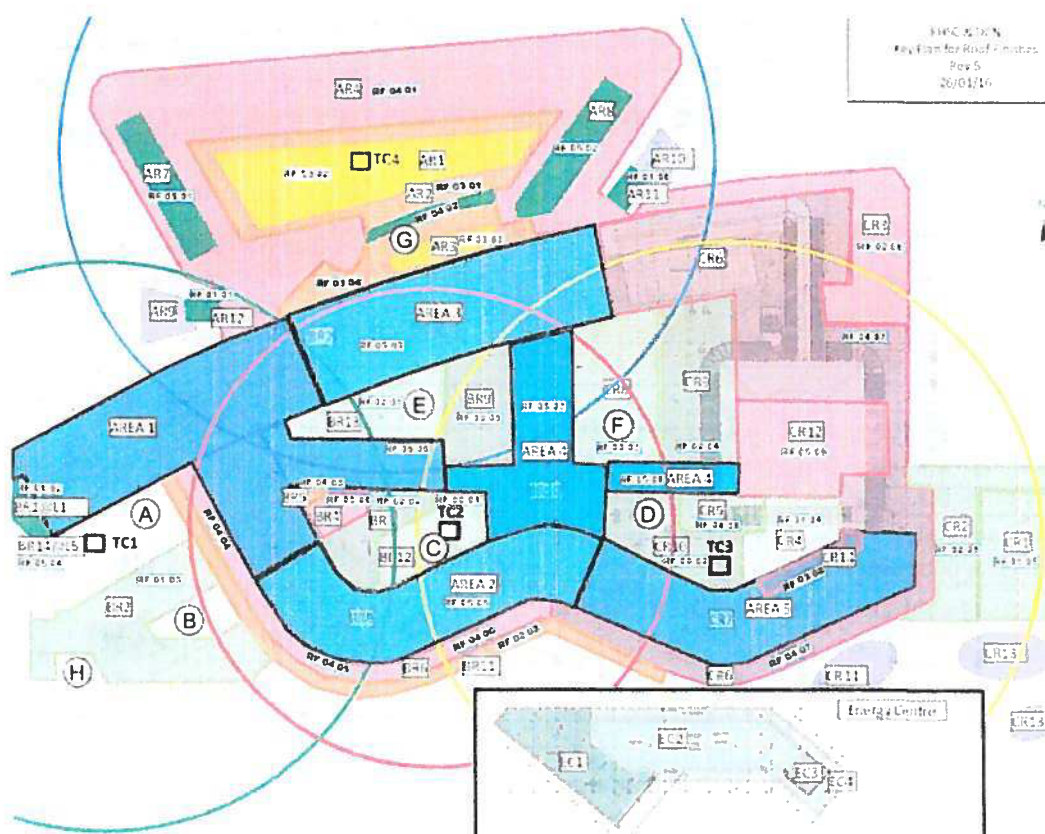
**BMCE Final Sign Off**

Site Representative: Signature: Date: 12-10-16

NCR's Raised:

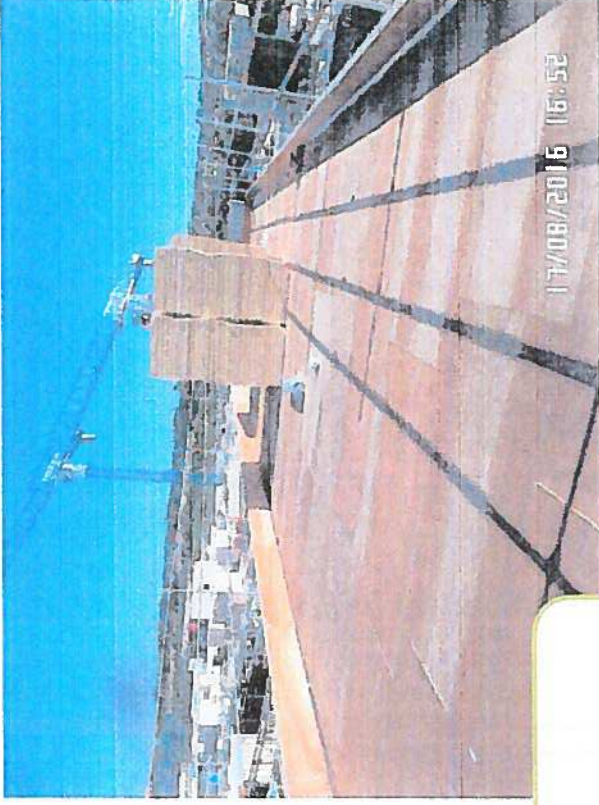
**Distribution:** Maintain file on site for originals

## ROOF PLAN

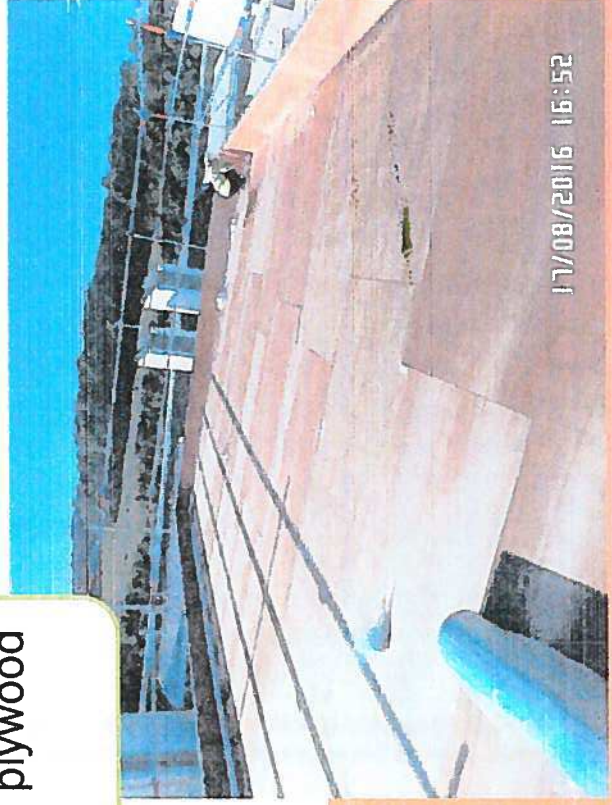


**AP7 ROOF**  
BY STEFAN NINU  
ROOF QUALITY PHOTOS





Installation of plywood







Roof details



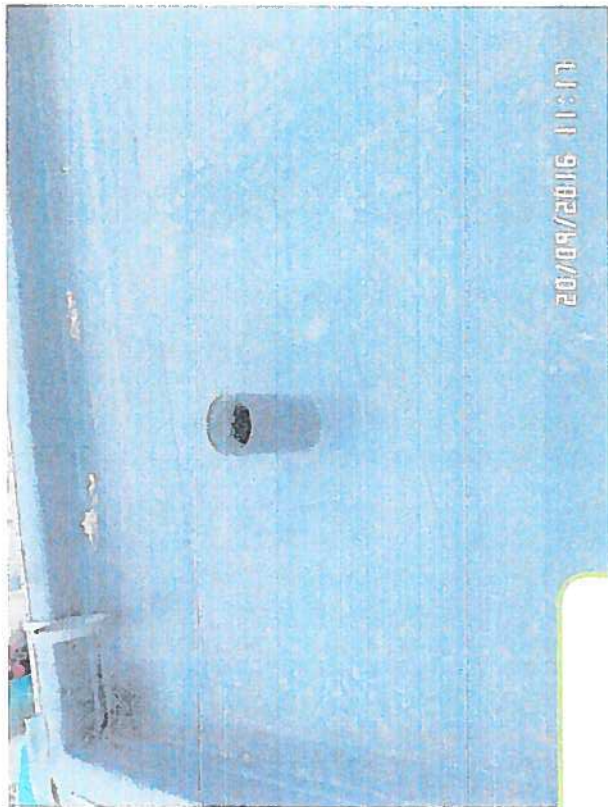




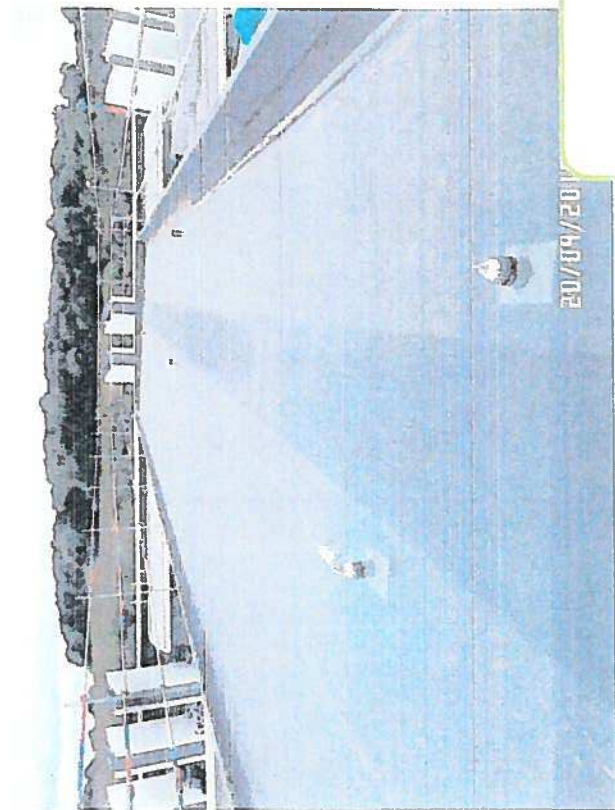
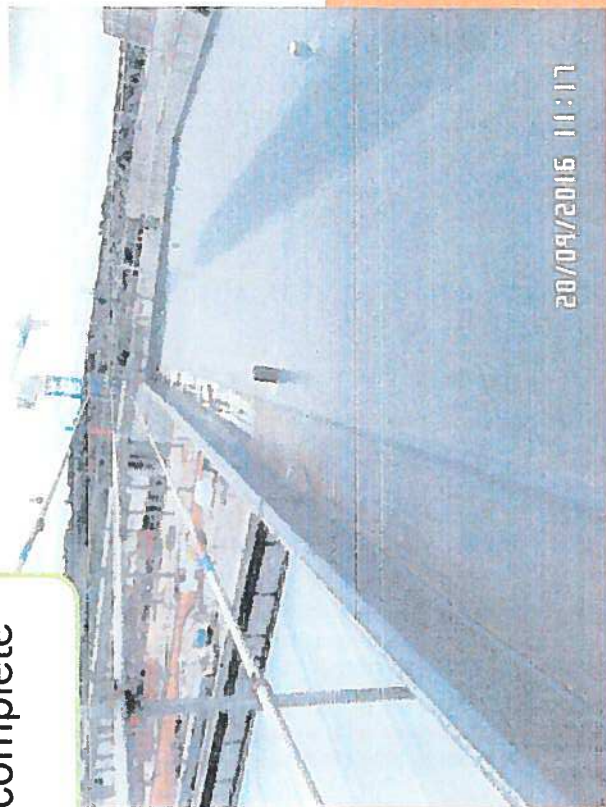
Roof details








Roof works complete



## Quality Check Sheet Ash & Lacy Standing Seam Cladding System

**SITE: RHSC EDINBURGH**

| <b>Element Description:</b>  | Ashzip Standing Seam   | <b>Site:</b>   | RHSC        |        |          |
|--|--|--|-------------|--------|----------|
| <b>Description of Activity:</b>  | Installation of Ash & Lacy Ashzip Standing Seam Cladding System. | <b>Project:</b>  | R2635       |        |          |
| <b>Contractor Name:</b>  | Topek  |  |             |        |          |
| <b>Client Name:</b>  | MPX  |  |             |        |          |
| <b>Date of Inspection(s):</b>  | As works progress  |  |             |        |          |
| <b>Location of Inspection:</b>   | Area 6   |  |             |        |          |
| <b>Criteria for Inspection:</b><br>Please see below for the following checkpoints during installation  |  | <b>Review Code Key:</b><br>✓ = Complete & Satisfactory<br>U = Unsatisfactory (Raise NCR) |             |        |          |
| Item Description<br><small>NOTE: The items below are the minimum required standard, other specific check maybe required from criteria listed.</small>        | Topek  |  | BMCE        |        | Comments |
|  | Date   | Signed   | Review Code | Signed |          |
| 1. Drawing & Spec available  | 31/03/17   |      |             |        |          |
| 2. Fixing Rails / purlins and steel by other (BMCE) check alignments. Topek will require to see steel handover   | 28/03/17   |  |             |        |          |
| 3. Installation of 0.7mm liner sheets securely fastened as per Topek approved drawings and manufactures spec.  | 31/03/17   |  |             |        |          |
| 4. Ashflex 250 VCL sealed with Butyl tape @ end & side laps 2no run  | 03/05/17   |  |             |        |          |
| 5. Installation of Ashgrid Bars and Brackets; 240mm bracket fixed using 2no.fasteners diagonally across from each other, @ 1.0m for bracket to the bars.     | 03/05/17   |  |             |        |          |
| 6. Installation of gutters   | 05/03/17   |  |             |        |          |
| 7. Installation of 320mm Knauff Factory clad 40 mineral wool insulation to system as per design spec.  | 03/05/17   |  |             |        |          |
| 8. Installation of Ashzip aluminium mill stucco embossed 0.9mm 65/400 profiled sheets securely fastened as per Topek approved drawings and manufactures spec | 09/05/17   |  |             |        |          |
| 9. Installation of Flashing/Trims <del>80mm</del> securely fastened as per Topek approved drawings and manufactures spec.                                    | 12/05/17   |  |             |        |          |
| 10. Spot-check on completion for damage / defects  | 15/05/17   |  |             |        |          |



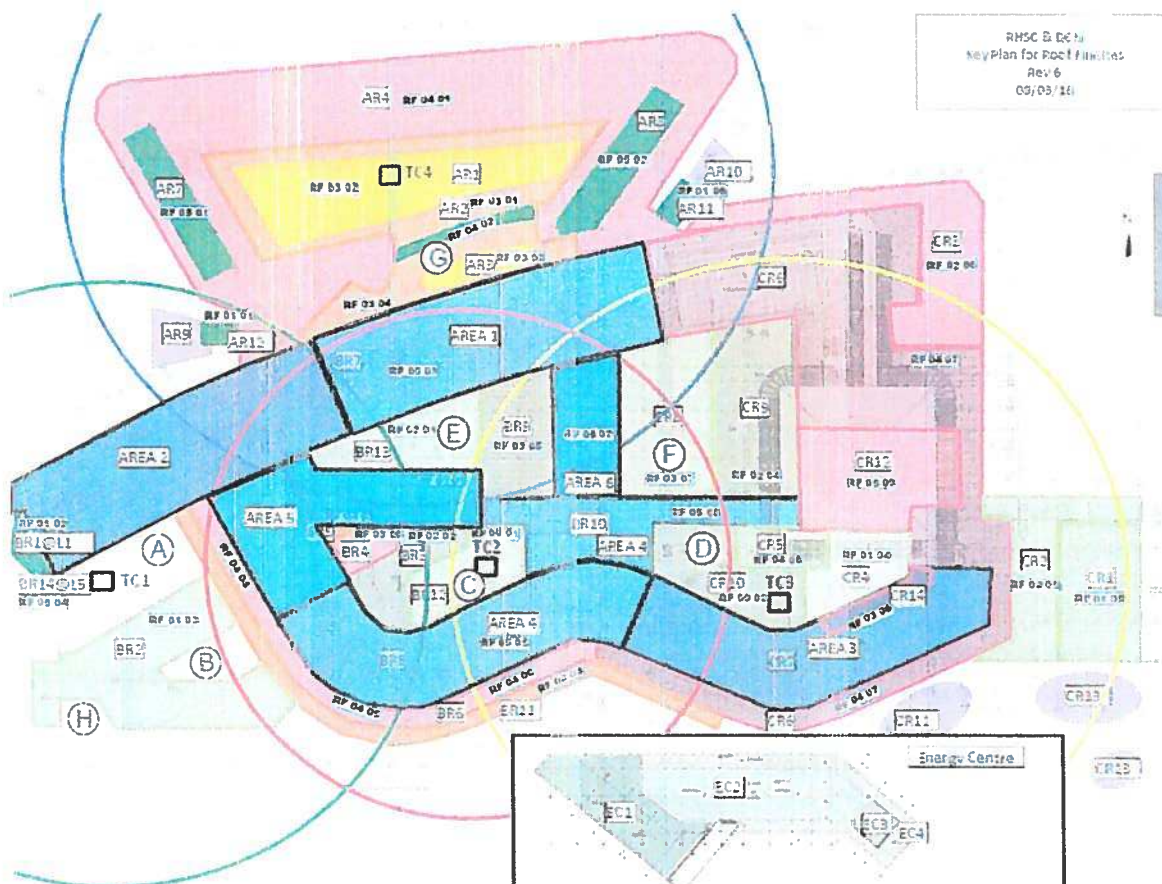
12 Area cleaned and clear of materials/debris

Date:

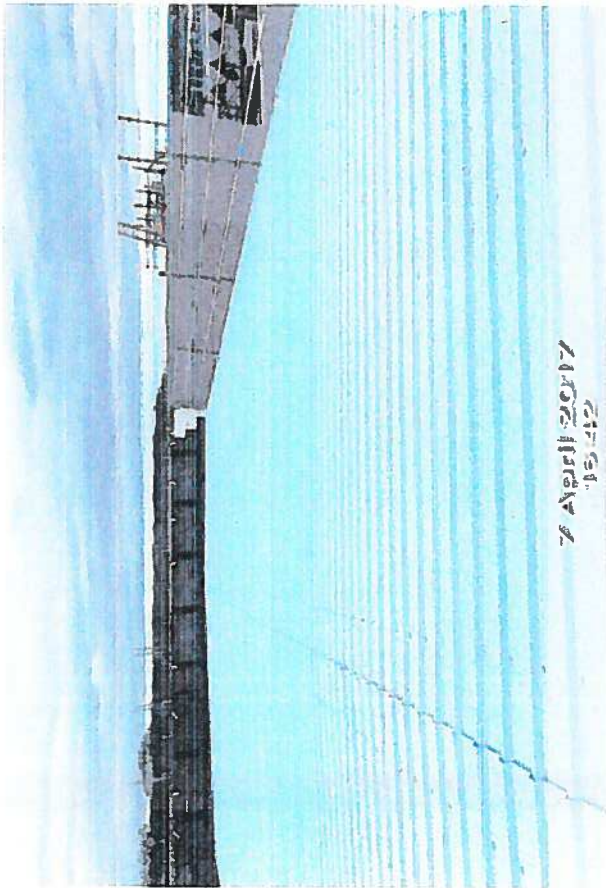
Date:

## NCR's Raised

**Distribution:** Maintain file on site for originals







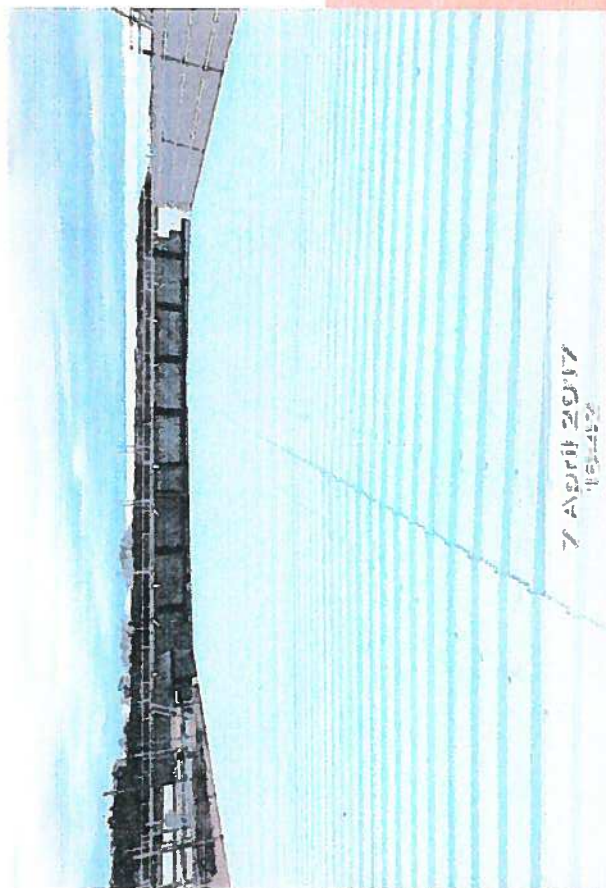
7 April 2017  
15:42



7 April 2017  
15:43



7 April 2017  
15:43

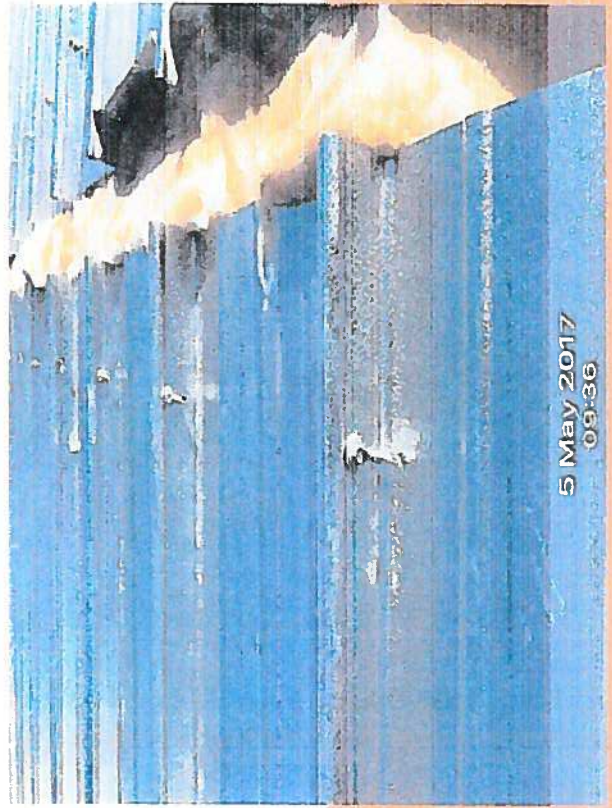
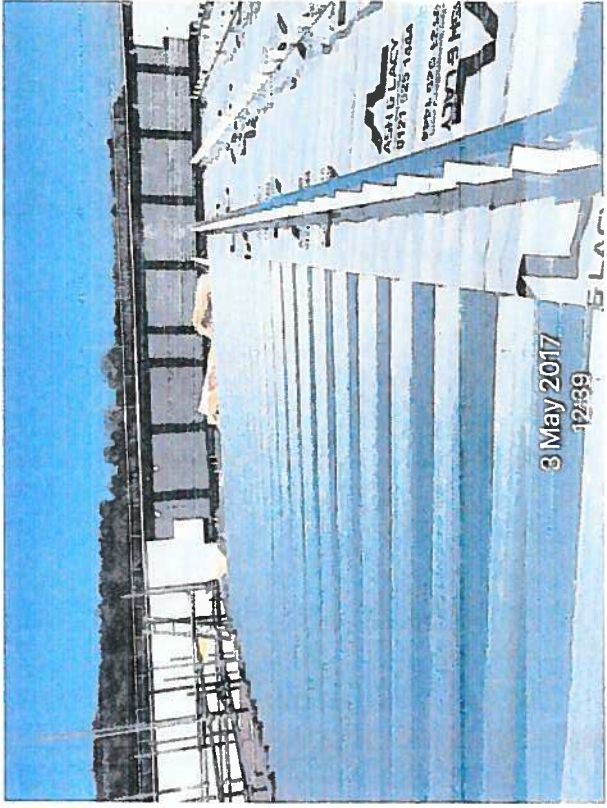


7 April 2017  
15:43

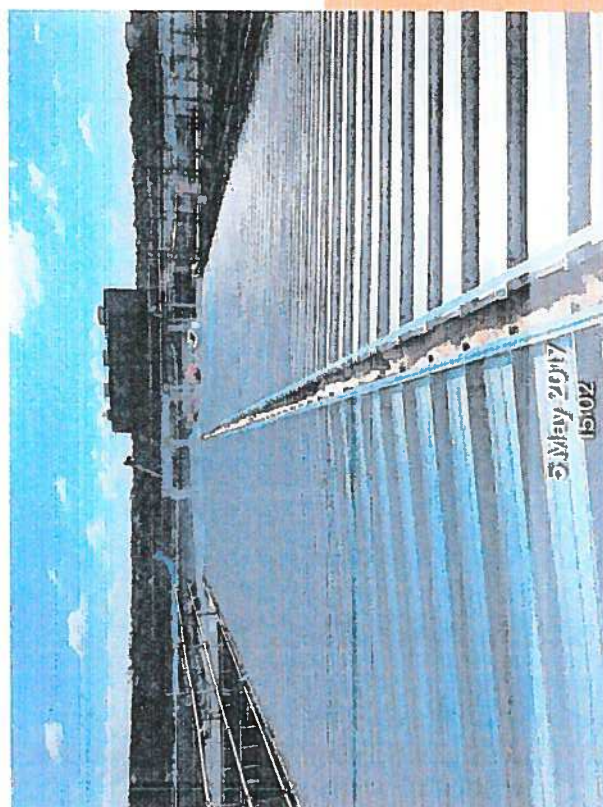
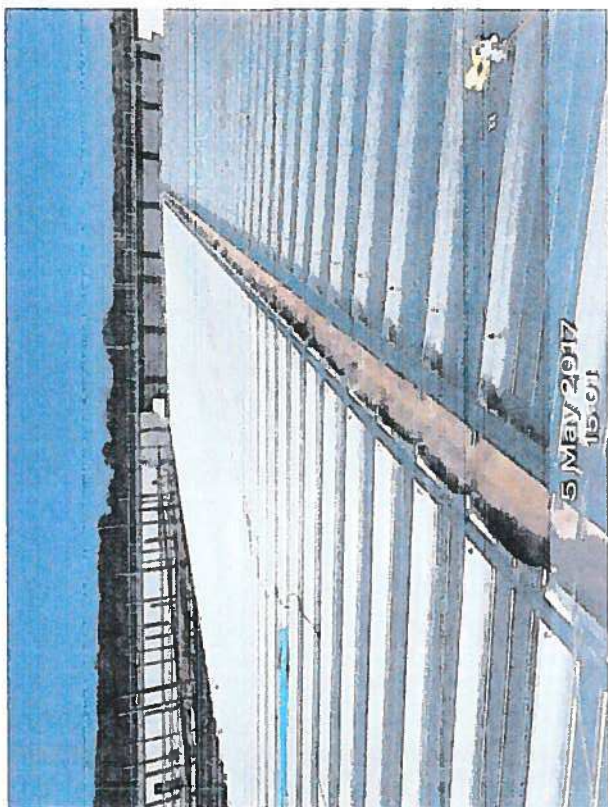




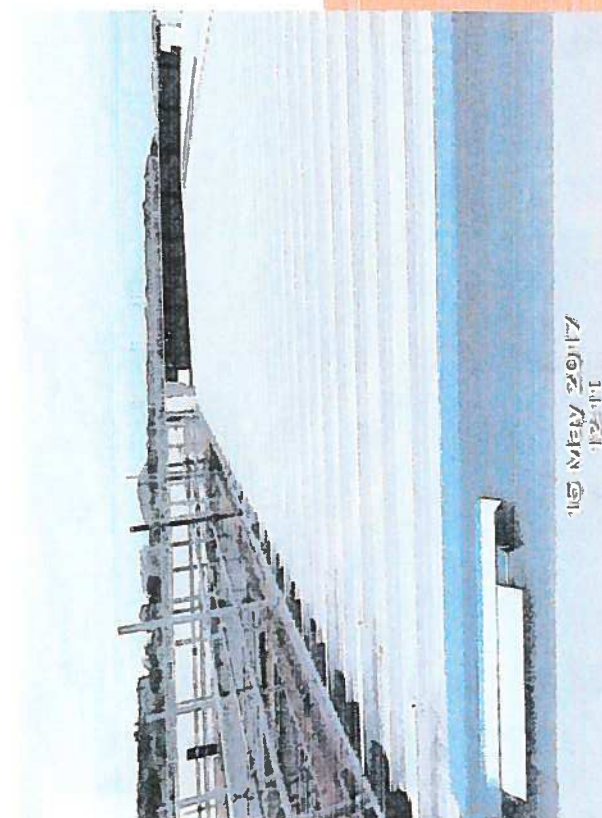












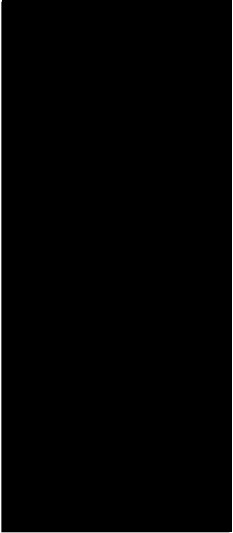
Royal Infirmary, Edinburgh, EH16 4TJ

01-01131

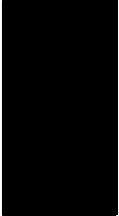
16-09-2016

Prepared for : See Section 1

Identified 22 Sections



—



Technical Engineer Grangemill Products



IKO PLC, Grangemill, Derbyshire, DE4 4BW



| Sections Title  | Assign To / Description  | Date Raised / Fixed                     | Status |
|-----------------|--|---|--------|
| Client Details: | <div>Business Manager: [REDACTED]</div> <div>Client: [REDACTED]</div> <div>Topek [REDACTED]</div> <div>Client contact: [REDACTED]</div> <div>Main Contractor: [REDACTED]</div> <div>Brookfield Multiplex [REDACTED]</div> <div>Installer: [REDACTED]</div> <div>No. of operatives: 3</div> | Raised: 16-09-2016<br>Fixed: 16-09-2016 | Fixed  |

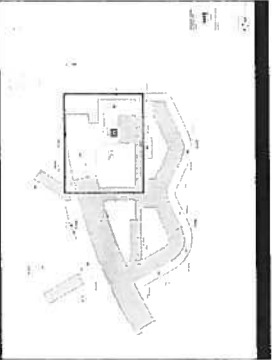
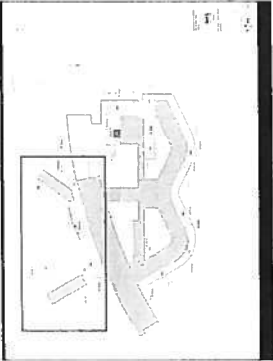
## Visit Details

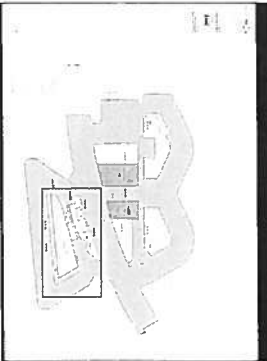

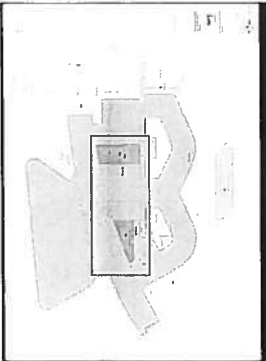

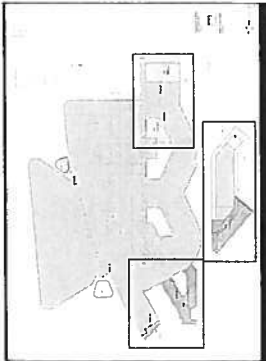
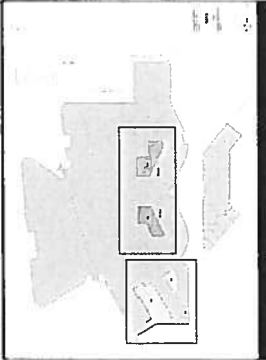


Raised: 16-09-2016  
Fixed: 16-09-2016



Fixed

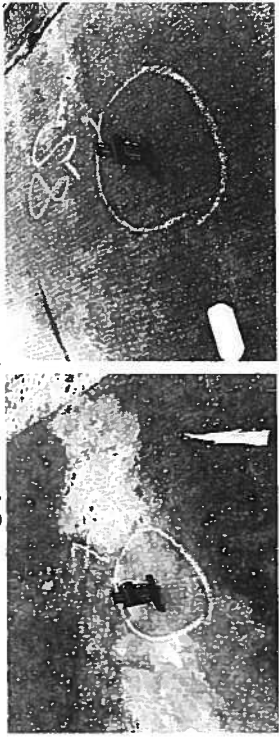
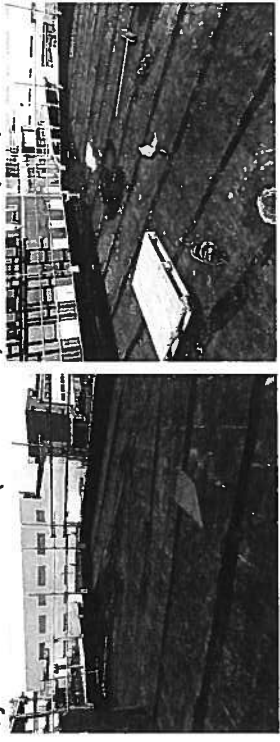
Weather: Clear/Dry  
Temperature: 19DegC  
Area: 8000m2  
Completion: 80%

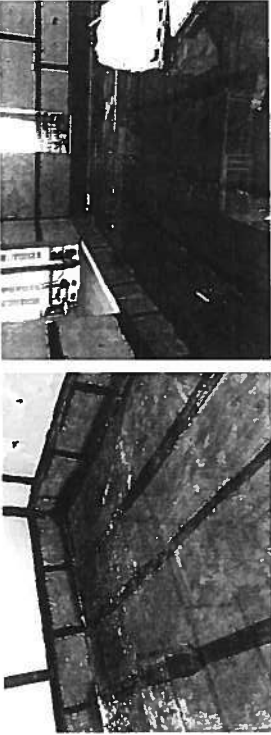
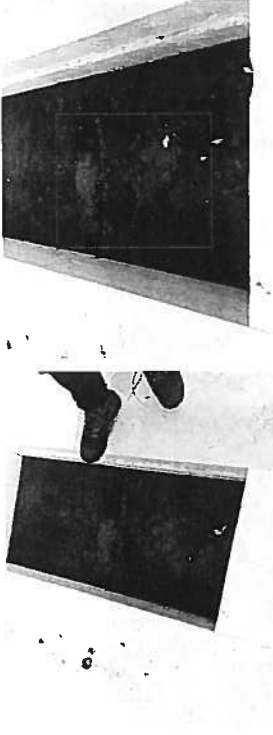
| Sections Title                      | Assign To / Description  | Date Raised / Fixed  | Status |
|-------------------------------------|--|--|--------|
| System Details                      | <div>Antee Type: 35MW</div> <div>PermaTEC Ecowrap: Yes</div> <div>PermaTEC Anti-Root: Yes</div> <div>Permaflash-D: Yes</div> <div>Permaflash-R: Yes</div> <div>Permaguard-F: Yes</div> <div>Permaguard-M: Yes</div> <div>High Penetration Primer: Yes</div> <div>Insulation: Yes</div> <div>Water Control Layer (WCL): Yes</div> <div>Ballast: Yes</div> <div>Pavers: Yes</div> <div>Green Roof: Yes</div>   | <div>Raised: 16-09-2016</div> <div>Fixed: 16-09-2016</div> | Fixed  |
| Deck / Substrate (In-situ concrete) | <div></div> <div>Main roof area (picture 1 - highlighted) is now complete and covered. Deck witnessed on previous visits and appeared satisfactory</div> <div>Main roof area helipad ramp area (picture 2 - highlighted) is complete. Deck witnessed on previous visits and appeared satisfactory.</div> | <div>Raised: 16-09-2016</div> <div>Fixed: 16-09-2016</div> | Fixed  |

| Sections Title                                    |   | Assign To / Description   | Date Raised / Fixed | Status |
|---|---|---|---------------------|--------|
| Deck / Substrate (In-situ concrete) - continued 2 |    | Third floor atrium walkway area (picture 1 - highlighted) is now covered. Deck witnessed on previous visits and appeared satisfactory.  | Raised: 16-09-2016  | Fixed  |
|   |    |   | Fixed: 16-09-2016   |        |
|   |   | Third floor green roof areas (picture 2 - highlighted) now installed.   |                     |        |
| Deck / Substrate (In-situ concrete) - continued 3 |    | Second floor green roof areas (picture 1 - highlighted) have been installed, see previous visit reports. Damaged insulation inspected this visit (See insulation section of this report). | Raised: 16-09-2016  | Fixed  |
|   |    |   | Fixed: 16-09-2016   |        |
|   |   | Second floor balcony area (picture 2 - highlighted) is now complete. Deck was inspected on previous visits and appeared satisfactory.   |                     |        |
| Deck / Substrate (In-situ concrete) - continued 4 |  | First floor green roof areas (picture 1 - highlighted) were being installed at the time of the visit (See PermaTEC installation section of this report).                                  | Raised: 16-09-2016  | Fixed  |
|   |  |   | Fixed: 16-09-2016   |        |
|   |   | Ground floor green roof areas (picture 2 - highlighted) have not yet been installed.  |                     |        |

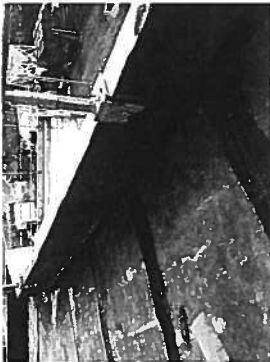







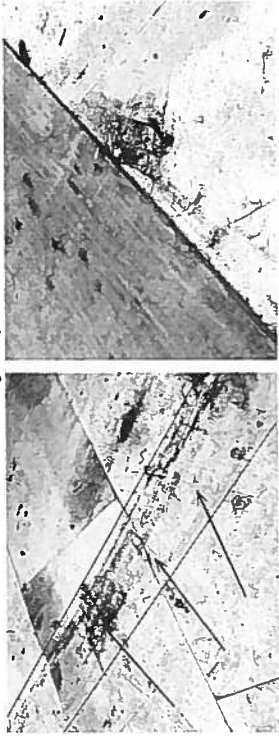
| Sections Title  | Assign To / Description   | Date Raised / Fixed                     | Status  |
|---|---|---|---------|
| <br>Priming (PermaTEC)                     | <div></div> <p>The primer appeared to have soaked in in some areas (picture 1), and a further coat shall be required.</p>       | Raised: 16-09-2016<br>Fixed:            | Pending |
| <br>Peel / Bond / Adhesion Test (PermaTEC) | <div></div> <p>The leading edge of the installed PermaTEC was checked for adhesion and found to be satisfactory (Picture 1)</p> | Raised: 16-09-2016<br>Fixed: 16-09-2016 | Fixed   |

| Sections Title                                     | Assign To / Description   | Date Raised / Fixed          | Status  |               |      |      |             |      |      |                |   |       |
|--|---|------------------------------|---------|---------------|------|------|-------------|------|------|----------------|---|-------|
| Thickness Testing (PermaTEC)                       | <div></div> <p>tested system thicknesses (mm)</p> <table><tr><th>Overall(mm).</th><th>PF(mm).</th><th>PermaTEC(mm).</th></tr><tr><td>7.8.</td><td>1.5.</td><td>6.3. (Level</td></tr><tr><td>8.5.</td><td>1.5.</td><td>7.0. (Level 1)</td></tr></table> <p>Have depth checks been conducted by the installing contractor at 1 per 25m2 (Yes/No/Not seen): Not seen</p> <p>All recorded thicknesses meet the minimum thickness requirements (Yes/No): Yes</p> <p>Has the roof been leak tested (Yes/No/Not required): Yes (Main area, Helipad ramp area,</p> | Overall(mm).                 | PF(mm). | PermaTEC(mm). | 7.8. | 1.5. | 6.3. (Level | 8.5. | 1.5. | 7.0. (Level 1) | Raised: 16-09-2016<br>Fixed: 16-09-2016 | Fixed |
| Overall(mm).                                       | PF(mm).   | PermaTEC(mm).                |         |               |      |      |             |      |      |                |   |       |
| 7.8.   | 1.5.  | 6.3. (Level                  |         |               |      |      |             |      |      |                |   |       |
| 8.5.   | 1.5.  | 7.0. (Level 1)               |         |               |      |      |             |      |      |                |   |       |
| System Installation (PermaTEC) - Horizontal (Flat) | <div></div> <p>Installation was taking place on Level 1 (Seperate building) at the time of the visit, and appeared satisfactory (pictures 1&amp;2)</p>   | Raised: 16-09-2016<br>Fixed: | Pending |               |      |      |             |      |      |                |   |       |

| Sections Title   | Assign To / Description  | Date Raised / Fixed                                 | Status  |
|--|--|---|---------|
| <div>System Installation (PermaTEC) - Horizontal (Flat) - continued</div> <div></div> | <div>The third roof green roof areas are now complete and appear satisfactory (pictures 1&amp;2)</div>   | <div>Raised: 16-09-2016<br/>Fixed: 16-09-2016</div> | Fixed   |
| <div>System Installation (PermaTEC) - Horizontal (Flat) continued 2</div> <div></div> | <div>One section of insulation has been left out on one of the level 2 green roof sections (picture 1), as some concrete has been spilt on the completed PermaTEC and has set (picture 2). It was deemed most practical to leave the set concrete in place, rather than remove, as removal would cause damage to the PermaTEC system, a repair and subsequent re-leak testing would be required.</div> | <div>Raised: 16-09-2016<br/>Fixed:</div>            | Pending |



| Sections Title  |  | Assign To / Description  | Date Raised / Fixed | Status  |
|---|--|--|---------------------|---------|
|  | System Installation (PermaTEC) - Vertical (Upstands) |   | Raised: 16-09-2016  | Pending |
|   |  | No installation of the upstands was taking place at the time of the visit.<br><br>All witnessed upstands appears satisfactory.<br><br>Level 1 green roof area (picture 1)<br>Level 3 green roof area (picture 2) | Fixed:              |         |
|  | Outlets / Drainage (PermaTEC)                        |   | Raised: 16-09-2016  | Pending |
|   |  | All witnessed outlets appear satisfactory.<br><br>Level 3 green roof area (picture 1)<br>Level 1 green roof area (picture 2)   | Fixed:              |         |
| System Installation (PermaTEC) - Pitch pockets                                      |  |    | Raised: 16-09-2016  | Fixed   |
|   |  | Not present  | Fixed: 16-09-2016   |         |
| System Installation (PermaTEC) - Pipe penetrations                                  |  |   | Raised: 16-09-2016  | Fixed   |
|   |  | No pipe penetrations witnessed this visit.<br><br>All have appeared satisfactory on previous visits (See previous reports).  | Fixed: 16-09-2016   |         |

| Sections Title  | Assign To / Description  | Date Raised / Fixed                             | Status         |
|---|--|---|----------------|
|  | <p>Insulation / Water Control Layer (PermaTEC)</p> <p>The IKO Enertherm 220mm installed on level 2 has become damaged by trafficking (pictures 1&amp;2). It is recommended that the insulation be replaced, as the witnessed damage has created channels in the insulation (picture 1 highlighted) that could cause water to track be retained on the surface of the insulation, or track away from the fixed outlets.</p> | <p>Raised: 16-09-2016<br/>Fixed:</p>            | <p>Pending</p> |
| <b>Ballast / Pavers / Green Roof</b>  | <p>No further ballast or pavers have been installed since the last visit (see previous report)</p>   | <p>Raised: 16-09-2016<br/>Fixed:</p>            | <p>Pending</p> |
| <b>Visit Overview</b>   | <p>The overall installation appears satisfactory to date.</p> <p>Observations, issues or points of note raised this visit:</p> <ol style="list-style-type: none"> <li>1. Damaged insulation requires replacing on level 2</li> <li>2. Spilt concrete on level 2 can be left in place to prevent any damage caused by removal.</li> </ol>   | <p>Raised: 16-09-2016<br/>Fixed: 16-09-2016</p> | <p>Fixed</p>   |

| Sections Title  | Assign To / Description  | Date Raised / Fixed                     | Status |
|-----------------|--|---|--------|
| Disclaimer      | <p>[REDACTED]</p> <p>This report is merely a record of the works completed and available at the time of inspection. Working procedures, quality and integrity of the completed works are the sole responsibility of the installing contractor. IKO Plc remain only responsible for the products that they have supplied.</p> <p>This report is issued to the system installing contractor, for their records and highlighting any issues that require rectifying in relation to the installation of the system or any associated factors i.e deck condition/suitability. Failure to rectify any highlighted issued, may affect the issuance of any guarantees.</p> | Raised: 16-09-2016<br>Fixed: 16-09-2016 | Fixed  |
| Next Visit Due: | <p>[REDACTED]</p> <p>W/C 17/10/2016</p>  | Raised: 16-09-2016<br>Fixed: 16-09-2016 | Fixed  |



|                 |                    |   |          |
|-----------------|--------------------|---|----------|
| <b>Project:</b> | RHSC & DCN         | <b>Project Spec Ref:-</b>                   | PD15-142 |
| <b>Address:</b> | Edinburgh EH16 4JT |   |          |
| <b>Size</b>     | 500m2 approx       | <b>% Completed</b>                          | 100%     |
|                 |                    | <b>Weather Conditions &amp; Temperature</b> | Sunny 18 |

|                               |             |                          |             |
|-------------------------------|-------------|--------------------------|-------------|
| <b>Installing Contractor:</b> | Topek       |                          |             |
| <b>Site Contact: :</b>        |             | <b>Telephone Number:</b> | 07841497418 |
| <b>Business Manager</b>       | 07951958131 | <b>Contact Details:</b>  |             |

|  |   |  |   |
|--|---|--|---|
| <b>Number of: Operatives on Site:</b>  | 2   | <b>IKO Polymeric Trained Operatives:</b> | 2 |
| <b>IKO Polymeric Training Required</b> | <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> | <b>SIG Armourplan Trained Operatives</b> |   |

**Names of Trained Operatives on site:**

|  |
|--|
|  |
|--|

#### Specification Summary

|   |                                |                          |  |
|---|--------------------------------|--------------------------|--|
| <b>Contract Details</b>                   | New Construction               | <b>Building Category</b> | New Build/Private Other  |
| <b>Deck Type/ Preparation:</b>            | D159 structural metal decking. |                          |  |
| <b>Vapour Control Layer:</b>              | Spectravap PE VCL              |                          |  |
| <b>Insulation (Type &amp; Thickness):</b> | IKO Enertherm ALU PIR 150mm    |                          |  |
| <b>Membrane</b>                           | <b>Roll N°/ I.D N°</b>         | <b>Colour</b>            | <b>Key Ancillary Items:</b>  |
| Spectraplan SM                            |                                | Mid-Grey                 | <input checked="" type="checkbox"/> Sprayfast IBA<br><input checked="" type="checkbox"/> Sprayfast FMA                   |
| Spectraplan SG                            |                                | Slate-Grey               | <input checked="" type="checkbox"/> Sprayfast PCA<br><input checked="" type="checkbox"/> High Performance PU             |
| Armourplan P                              |                                | Light-Grey               | <input checked="" type="checkbox"/> Low Foaming PU<br><input checked="" type="checkbox"/> Contact Adhesive               |
| Armourplan PSG                            |                                | Black/Grey               | <input checked="" type="checkbox"/> Lap/Seam Cleaner<br><input checked="" type="checkbox"/> Armourprep                   |
| Armourplan SM                             |                                | Other                    | <input checked="" type="checkbox"/> IKOfix Tubes/Plates<br><input checked="" type="checkbox"/> IKOfix Fasteners          |
| Armourplan SG                             |                                |                          | <input checked="" type="checkbox"/> IKO Strike Lightning Clips<br><input checked="" type="checkbox"/> Correct VCL Primer |
| Armourplan HDF                            |                                |                          |  |
| Armourplan Blanket                        |                                |                          |  |
| Armourplan G                              |                                |                          |  |
| Armourplan D                              |                                |                          |  |

|   |          |
|---|----------|
| <b>Other Ancillary Items: (Specify)</b> | Peelstop |
|---|----------|

|  |   |   |   |       |
|--|---|---|---|-------|
| Specification Conformity   | ✓ | X | x |       |
| Has a Specification Been Written For this Project?                                   | ✓ | X | x |       |
| If no, Give Reason For Non-Conformation In The Notes/ Comments Box Below.            |   |   |   |       |
| Has The Business Manager Been Made Aware There is No Specification for this Project? | ✓ |   | x | N/A X |

|                                  | ✓ | x | N/A | N/V | ON | P/I | Action Required / Comments: |
|----------------------------------|---|---|-----|-----|----|-----|-----------------------------|
| Roofing Materials Storage        |   |   |     |     |    | X   |                             |
| Roof Deck/ Substrate             |   |   |     |     |    | X   |                             |
| VCL Installation                 |   |   |     |     |    | X   |                             |
| Insulation Installation          |   |   |     |     |    |     |                             |
| Fixed To IKO Wind Calculations   | X |   |     |     |    |     |                             |
| Bedded Correctly                 | X |   |     |     |    |     |                             |
| Mech Fixed Correctly             | X |   |     |     |    |     |                             |
| Field Sheet                      |   |   |     |     |    |     |                             |
| Field Area Protection installed  |   |   | X   |     |    |     |                             |
| Fixed To IKO Wind Calculations.  |   |   | X   |     |    |     |                             |
| Bonded Correctly                 |   |   |     |     |    |     |                             |
| Mech Fixed Correctly             |   |   |     |     |    |     |                             |
| Lap/Weld Integrity               | X |   |     |     |    |     |                             |
| Drainage: RWO's                  |   |   |     |     |    |     |                             |
| Gutter Details                   |   |   |     |     |    |     |                             |
| IKOfix Fixings                   | X |   |     |     |    |     |                             |
| (or Name Other Brand)            |   |   |     |     |    |     |                             |
| Separation Layer Fitted          |   |   | X   |     |    |     |                             |
| Perimeters Details               | X |   |     |     |    |     |                             |
| Correct Perimeter Bars Used      | X |   |     |     |    |     |                             |
| Abutment Details                 | X |   |     |     |    |     |                             |
| Internal Kerbs                   | X |   |     |     |    |     |                             |
| Pipe Penetrations                |   |   | X   |     |    |     |                             |
| Penetration Restrained Correctly |   |   | X   |     |    |     |                             |
| IKO Polimar Liquid Detailing     |   |   | X   |     |    |     |                             |
| Welding Equipment                |   |   | X   |     |    |     |                             |
| Peel Test                        |   |   | X   |     |    |     |                             |
| Night Joints                     |   |   | X   |     |    |     |                             |
| Training Card Seen               |   |   | X   |     |    |     |                             |
| IKO Strike Clips Used            |   |   | X   |     |    |     |                             |
|                                  |   |   |     |     |    |     |                             |

N/A – Not Applicable    N/V – Not Visible    ON – Ongoing    P/I – Previously Inspected

**Notes/Comments:**

All works are now complete and have been finished to a good standard

Please see picture page for more info

|                          |                      |                      |
|--------------------------|----------------------|----------------------|
| <b>Reason For Visit:</b> | Scheduled Inspection | Passed for Guarantee |
|--------------------------|----------------------|----------------------|

For and on behalf of IKO Polymeric

Please Print: [REDACTED]

Signature

Date and Time of this Inspection.. Monday.. 5 September 2016 at 13:00

**Inspection Approval**

Notes/Comments

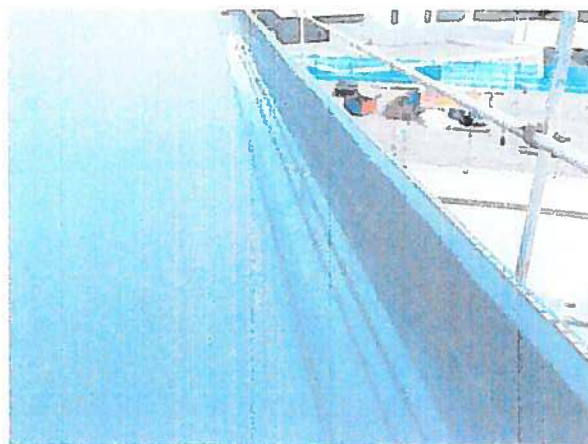
Signature

Please Print

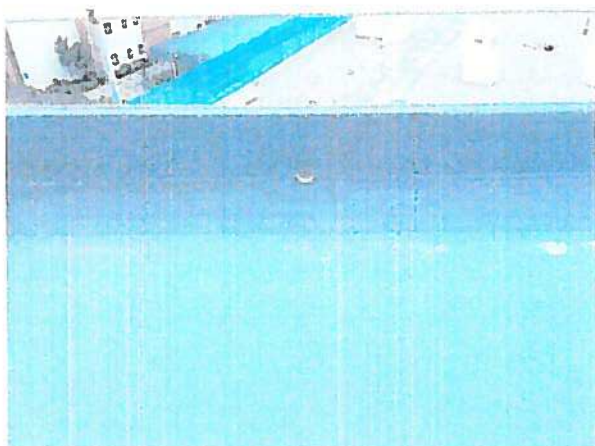
Date:



Overview of area 1 completed



Gutter section of area 1



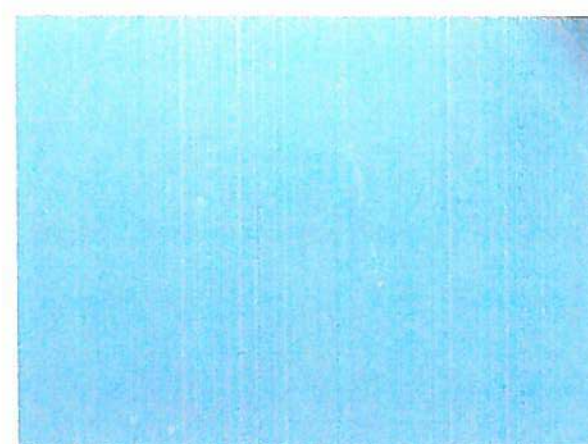
Outlets have been installed



Overview of area 2



Upstands installed with capping to follow



Patch repair has been carried out to damaged membrane. The roof has been tested and repaired where necessary



# JHH Engineering Ltd

Independent Consultancy to the Construction Industry

UKAS Accredited to ISO/IEC 17025:2005



TOPEK Ltd  
Suite 3, Unit 1  
15 Cambuslang Road  
Cambuslang  
GLASGOW  
G32 8NB

JHH/09349b/8534  
15 June 2016

- Electronic Integrity testing of roof system and building envelope membranes
- Watertightness testing of glazing systems and building envelope components (to AAMA 501.2.03 / BS EN 13051)
- Airtightness testing of building envelopes (to ATTMA TS1)
- Thermography Inspections - eg insulation integrity, electrical systems, predictive maintenance
- "Long Reach" camera inspections
- Roofing System / Building Envelope / Dilapidation surveys and leak detection (inc moisture build-up / retention within insulation, etc)
- Concrete moisture/hardness testing; noise/vibration testing; environmental monitoring
- Design calculations for roofing systems.

## References:

- A. Your Purchase Order N° 36745/PRE/R2635, dated 02 Jun 16
- B. Your Oral Instruction, 14 Jun 16.

Dear Mr Ninu

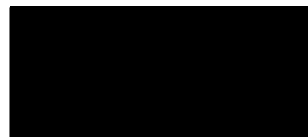
## CHILDRENS HOSPITAL, EDINBURGH RI – VISIT 2

Further to the References, *JHH Engineering* carried out Electronic Integrity testing to the **PERMATEC** membranes at the Subject Property. Testing was completed on Wednesday 15<sup>th</sup> June 2016.

The report is enclosed.

Should you have queries, or seek clarification, please do not hesitate to contact me. In the meantime, we at *JHH Engineering* look forward with pleasure to our being of Service in the future.

Yours sincerely



BEng (Hons) CEng CMarEng MIMarE MInstNDT  
Director, JHH Engineering Ltd

21 Kilnford Drive, Dundonald, Ayrshire, KA2 9ES

Tel: 01563 850 916 • Fax: 01563 850 989 • [www.jhhengineering.co.uk](http://www.jhhengineering.co.uk)  
VAT Registration N°: 814 3663 36 • Registered in Scotland N°: SC 174 529

# *Certificate of Integrity*

## *via Electronic Integrity testing*

to:  
DIHM - JHH/TMM/01 (Test Procedures N° 1&2 {first accredited by UKAS July 2012})

on behalf of:

**TOPEK Ltd**  
Suite 3 Unit 1 15 Cambuslang Road Glasgow G32 8NB

at:

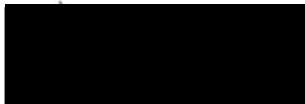
**"Childrens Hospital"**  
**Edinburgh Royal Infirmary**  
**51 Little France Crecent, Edinburgh, EH16 4SA**  
**Visit 2**

on:  
15<sup>th</sup> June 2016

covering approximately:  
545m<sup>2</sup> HOT MELTs applied to Main Roof

Test result:  
**passed**  
(see Report: JHH/09349b/8534, dated 15 June 2016)

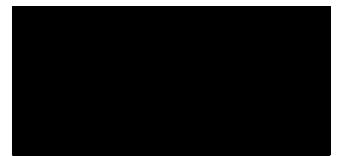
For, and on behalf of,  
*JHH Engineering Ltd*



Janice Gamble  
Company Secretary



For, and on behalf of,  
*JHH Engineering Ltd*



Malcolm E D Gamble  
BEng (Hons) CEng CMarEng MIMarE MInstNDT  
Director, JHH Engineering Ltd



4255





**CHILDRENS HOSPITAL**  
**EDINBURGH**

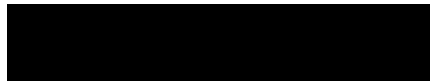
**Visit 2**

**15<sup>th</sup> June 2016**

**Roofing System Waterproofing Membranes**  
**Electronic Integrity Testing**

**Site:** **Childrens Hospital**  
**Edinburgh Royal Infirmary**  
**(c/o Brookfield Multiplex)**  
**51 Little France Crescent**  
**Edinburgh**  
**EH16 4SA**

**Client:**



**TOPEK Ltd**

**On behalf of: TOPEK Ltd**  
**Cambuslang, Glasgow**



# JHH Engineering Ltd

UKAS Accredited Test Laboratory (N° 4255) - to ISO 17025



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## 1. SUMMARY

Electronic Integrity testing of the **PERMATEC** membranes identified zero defects.

## 2. INTRODUCTION AND OBJECTIVES

The investigation reported herein was requested by Mr Stefan Ninu, TOPEK Ltd (Murdostoun House, Linnet Way, Strathclyde Business Park, Bellshill, ML4 3PB).

The objective of the investigation was:

- to test the **IKO PERMANITE PERMATEC MONOLITHIC HOT MELT** waterproofing membranes - for their integrities - via Electronic Integrity (EI) testing.

*JHH Engineering* wishes to record, with thanks, its gratitude for the assistance afforded by **TOPEK's** Mr Stefan Ninu.

The investigation was carried out on Wednesday 15<sup>th</sup> June 2016.

*JHH Engineering* is a **UKAS**<sup>1</sup> accredited testing laboratory N° 4255. EI testing falls within the agreed schedule of accreditation under ISO 17025:2005 (except where stated otherwise).

Further, *JHH Engineering* is a member of the **BINDT**<sup>2</sup>'s **SIG**<sup>3</sup>.

---

<sup>1</sup> **UKAS** = United Kingdom Accreditation Service.  
<sup>2</sup> **BINDT** = British Institute of Non-Destructive Testing.  
<sup>3</sup> **SIG** = Service Inspection Group.



### 3. RESTRICTIONS

This report, and its results/findings, conclusions and recommended follow-up actions, is intended for the use of **TOPEK Ltd** and its client(s), agent(s), patron(s) and contractor(s)/subcontractor(s).

*JHH Engineering* accepts no liability for any actions made, taken or inferred by third parties on the basis of the contents of this report.

This report may not be reproduced without the approval and permission of *JHH Engineering Ltd*. If so reproduced, it must be reproduced in full - not in part(s).





## 4. INVESTIGATIVE TECHNIQUES / EQUIPMENTS

The techniques and equipments utilised for this investigation have been drawn from the following standard *JHH Engineering* equipments:

- Holiday Detector  
{**Buckleys UVRAL PHD 1-20**}
  - Earth Leakage Detector  
{**Buckleys UVRAL WR1**}
  - Ultrasonic Seam Weld Assessment
  - Moisture Meters (resistive and capacitive) {**Tramex LeakSeeker**}
  - Moisture Meters (inductive) {**Tramex SideKick**}
  - Vacuum Integrity Detector
  - Pressurised Water Lance / Spray Bar (to AAMA 501.2 / BS EN 13051)
  - Fan Pressurisation (and Telemetry) (to ATTMA TS1 / BS EN 13829)
  - Long Reach Camera Inspections {**ExTech BR250 + BR-9CAM-5M**}
  - InfraRed Thermography {**Flir T420bx**}
- penetrations detector for waterproofing membranes:-  
exposed: to *DIHM - JHH/TMM/01, Test 1, Jul 12*  
(subject to **UKAS Accredited Schedule N° 1**)
- penetrations detector for waterproofing membranes:-  
exposed: to *DIHM - JHH/TMM/01, Test 2, Jul 12*  
ballasted: to *DIHM - JHH/TMM/01, Test 3, Jul 12*  
(subject to **UKAS Accredited Schedules N°s 2 + 3**)
- assessment of weld quality {ie welded/fused vice “stuck”} for waterproofing membranes (exposed only)
- determination of moisture levels within fabrics, and, moisture contouring
- determination of moisture levels within EPDMs, etc, and, moisture contouring
- penetrations detector for EPDMs, etc (exposed only)
- leakages/ingresses locator for glazing, cladding and curtain walling systems
- determination of building envelope airtightness
- inspections into and behind features, eg cladding panels, pipes, etc
- inspections and surveys of building envelopes



## 5. FINDINGS / RESULTS

**NB:** see **Schematic and Photographs** for area tested.

### Main Roof

#### Area 1 (test area coloured green)

(approx 115m<sup>2</sup>)

- clear of defects.

#### Area 2 (test area coloured green)

(approx 430m<sup>2</sup>)

- clear of defects.

## 6. COMMENTARY

Electronic Integrity (EI) testing, via the Holiday Detector (*JHH/TMM/02, Test 1*) and Earth Leakage Detector (*JHH/TMM/02, Test 2*) methods, identified zero defects.

Please note that this roof is being used as a working/storage platform by Other Trades and is, therefore, open to foot traffic and the potential for future damage.



## 7. EXCLUSIONS / RESTRICTIONS / ANOMALIES

The following membranes were either (a) NOT tested, or (b) tested but without guaranteed results:

- see Schematic.

### Please note:

- where membranes terminate or are sited at, or adjacent to, metallic structures, eg lightning conductors, outlets, hand rail stanchions, cladding/parapet cover flashings, plant stanchions, etc, testing may have been compromised - the validity of this test regime, with regard to these circumstances, cannot be guaranteed
- it is assumed that all seams had been probed, vigorously, by your operatives prior to the EI test
- where *JHH Engineering* has resorted to manual probing, such probing will identify ONLY that there is a potential weld weakness - in the absence of your technicians or without your express authority, *JHH Engineering* will NOT probe fully - it is your responsibility to probe fully to assess the length/depth/width of all such laps
- where laps have been partially welded (ie "stuck" instead of fused), these may have escaped detection by the EI Detector equipments.

## 8. CONCLUSIONS

*JHH Engineering* concludes that:

- the tested membranes are, **at the date/time of the issue of this report**, serviceable and watertight - consequently, the *Certificate of Integrity* is attached.



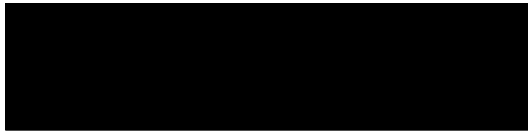


## 9. RECOMMENDATIONS

*JHH Engineering* recommends the following:

- zero membrane actions required to tested areas.

## 10. TESTER



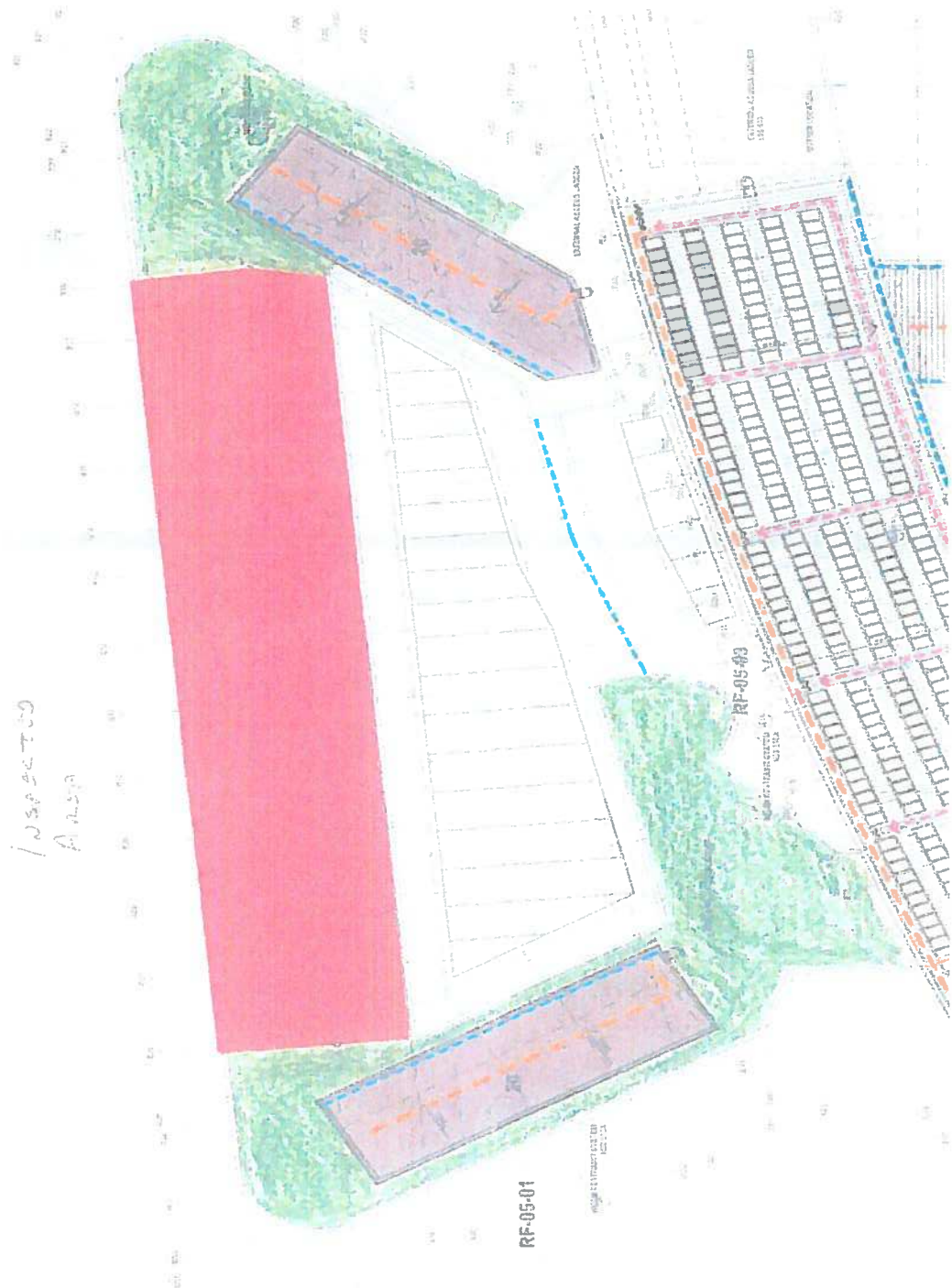
  
Technical Operative

15<sup>th</sup> June 2016



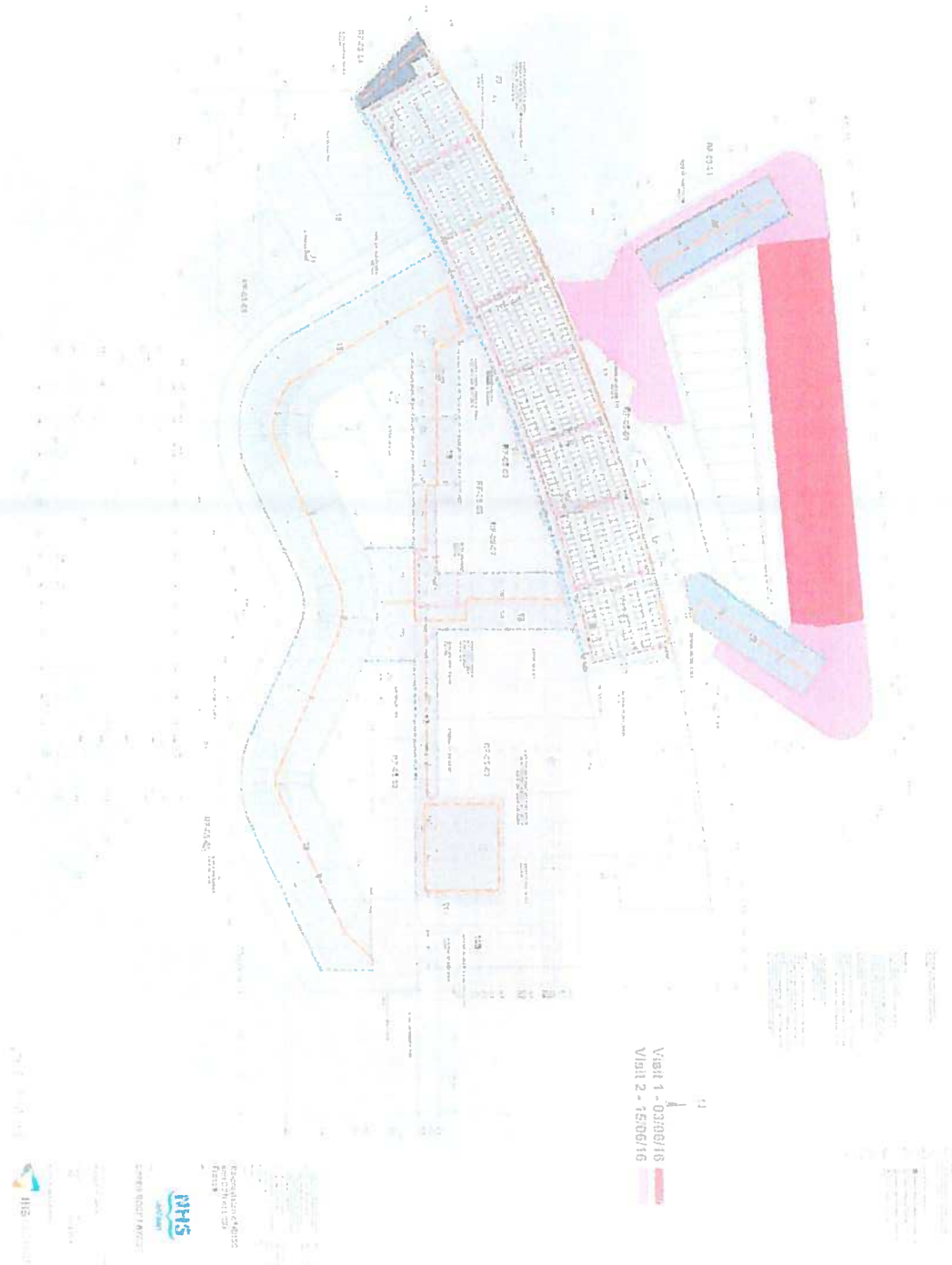


## 11. SCHEMATIC - 15/06/16





**11. SCHEMATIC - TESTED AREAS TO DATE**







## 12. PHOTOGRAPHS



1. Storage/working platform



2. As above

9D

FIRE STOPPING



**Certificate No. FH3273**

This is to certify that:

**ASTINS LTD**

At the following address:

**11 Magellan Terrace, Gatwick Road,  
Crawley, West Sussex, RH10 9PJ**

complies with the requirements of:

## **FIRAS CERTIFICATION SCHEME**

***Application of passive fire resisting products using***

***Penetration Sealing Systems***

To check the current validity of this certificate please contact FIRAS direct or visit our website  
[www.firas-database.co.uk](http://www.firas-database.co.uk)

Kenneth J Knight  
Chairman – Management Council

Issue No: 2  
Issue Date: 12<sup>th</sup> July 2013  
Original Date Issued: 11<sup>th</sup> Dec 2012





## **Firetronic/BORIS QA System**

### **Introduction**

The Firetronic system is an Android/Windows phone based electronic QA recording app and web site used by Astins to ensure firestopping is correctly recorded. Used by Astins operatives as they complete each firestop, details are captured in the same visit as install.

Information recorded includes:

- Seal size
- Materials / detail used
- Services
- Location description
- Location marked electronically on drawing (eg GA/fire wall layouts)
- Installer(s)
- Before and after photograph of each seal
- Time and date of install

The information recorded by BORIS exceeds the information Astins are asked to record as part of the FIRAS third party certification scheme.

### **Advantages**

- Future proofing - proper recording of all seals for QA purposes in electronic format that can be backed up and easily left on a server for document retention period
- On-going quality checking – Can look at all post-install photographs easily from any web browser from any location.
- Electronic – no need to enter handwritten data into excel etc. Drawings and work record sheets cannot be lost/destroyed
- Carried by the operatives, all recording is done during the same visit as the install – no need to wait to close out an area. No second visit to record works improves safety as access is only gained once.

## Example Screenshots of Mobile App

### Inputting Seal Information

Form 1 - Contract Work

SEAL DRAWING SITE FILE

Drawing - indicate location

Seal type

X

Y

Penetrating Service(1)

Add Penetrating Service

Number of other identical seals

0

Comments

### Marking Seal Location on drawing

Form 1 - Contract Work

SEAL DRAWING SITE FILE

Drawing - indicate location

### Recording action from site inspection

Form 1 - Contract Work

FINDING

Findings and Action Req...

Finding

Electrical portable appliance testing has not been carried out.

Action required

To create a weekly report of PAT testing

Timescale

1 Month

Add action Add finding Add photo

### DW Record being signed

Day Rate SIGN OFF FORM

Client sign off

Name

mark

I accept this Day Rate as per TECL's terms & conditions and confirm that will be processed for payment.

Add action Add photo

# Web Page Showing List of Seals – Updated live as seals are logged

## All Reports

You are logged in as Mark!  
Logout







[Briefings](#)
[Work summary](#)
[Certificates](#)
[COSHH](#)
[Controlled Equipment](#)
[Tech info](#)
[SHE Alerts](#)
[Bulletins](#)
[Follow Up](#)

Total records: 46  
Page: 1 of 1

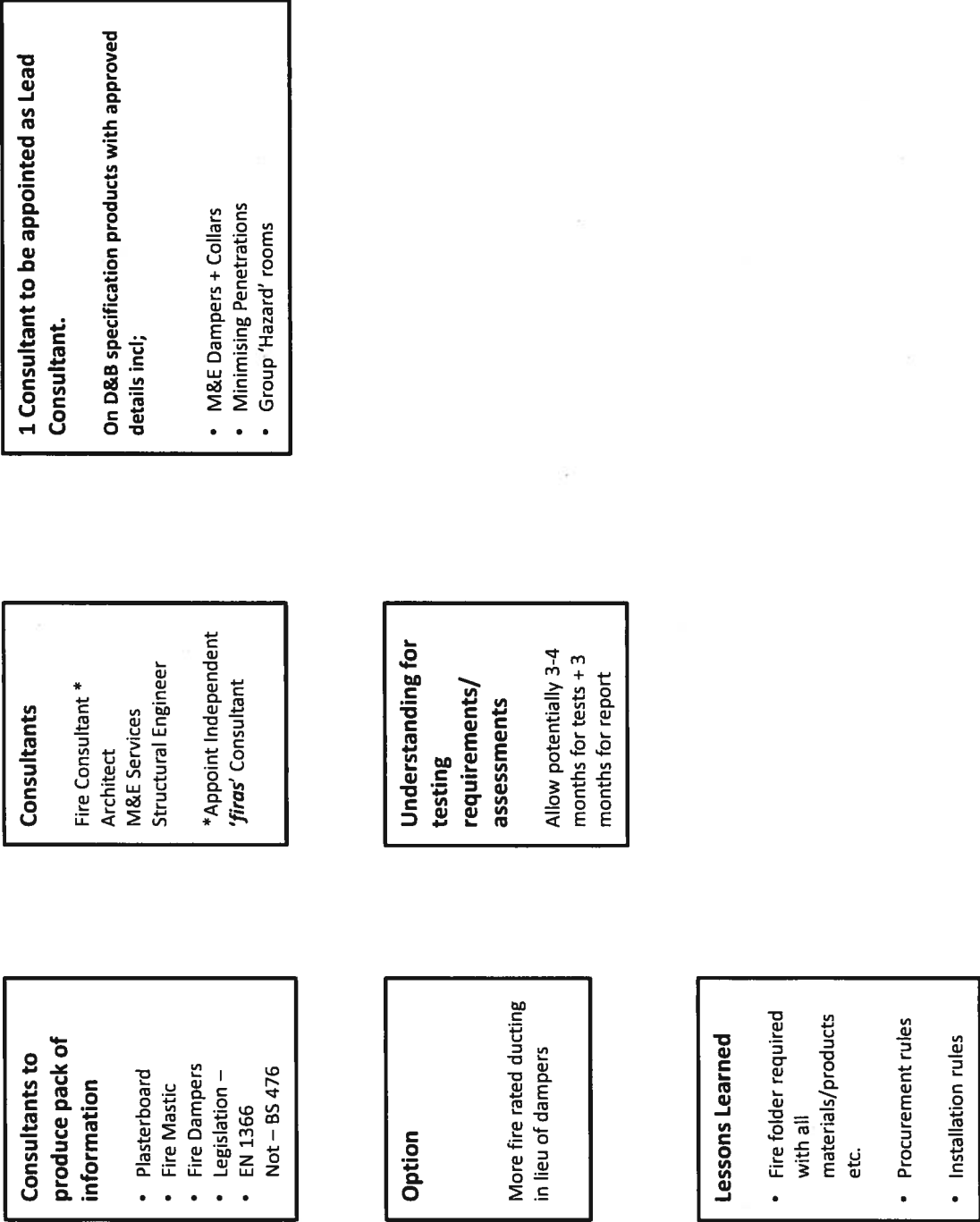
COSE 563120

Form 1 - Contract Work  
All users

Text search:

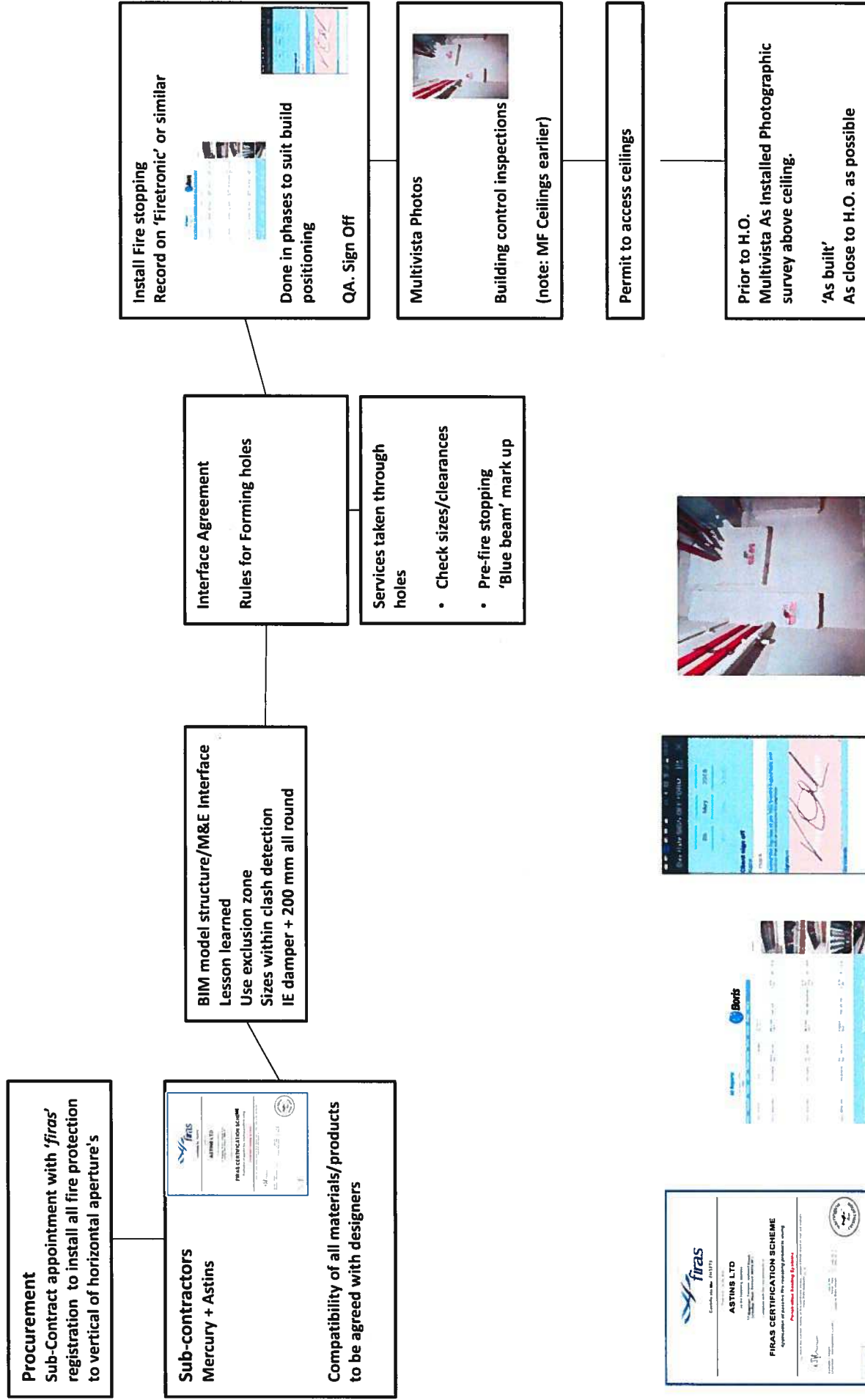
|                        |               |              |             |                      |      |      |               |            |                         |        |   |   |
|------------------------|---------------|--------------|-------------|----------------------|------|------|---------------|------------|-------------------------|--------|---|---|
| Form 1 - Contract Work | Mark Humphrey | Ground Floor | door head   | Batt & Mastic Type B | 1500 | 1500 | 0             | 60 Min F/S | 290                     | £26.00 |  |   |
| Form 1 - Contract Work | Mark Humphrey | First Floor  | door head   | Batt & Mastic Type A | 2000 | 1800 | Conduit/Cable | 0          | 60 Min F/S Ceiling Grid | 264    | £48.00  |    |
| Form 1 - Contract Work | Mark Humphrey | First Floor  | riser lobby | Compound 50mm        | 2000 | 300  | Pipe          | 0          | 60 Min F/S              | 50     | £7.00   |   |
| Form 1 - Contract Work | Mark Humphrey | First Floor  | df17        | Batt & Mastic Type B | 150  | 250  | Steel Column  | 0          | 60 Min F/S              | 30     | £1.00   |  |





# Fire Strategy - Above Ceilings

## MULTIPLEX



## Fire Strategy – Doors & Screens

### Doors/Screens etc.

- By BM Trada S.C. with Certification + Test Data in place
- Installer - BM Trada registered
- Benchmark – inspected by BM Trada
- Fit frames – check
- Mastic
- Checklist/ Photographic record on Zutec



9D

FIRESTOPPING  
DOORS

All Records Options Search































## MPX Door Installation Tracker

Folder Path / RHSC &amp; DCN - Edinburgh / MPX Onsite / MPX Fire Door Inspections / MPX Door Installation Tracker

New Record   

Show 100 records Search:

Showing 1 to 100 of 2439 (total: 2439) Back 1 2 3 4 5 Next

|    |    |  |  |  |  |  |  |                         |
|---|---|---|---|---|---|---|---|--|
|    |    | <b>Not Inspected</b>  | 10/11/2016 11:37  | OR-01-05  | D-1-P1-011  | Moisture door 8% frame 12% 28/7/17  | NFR   |  55U149122353421U.jpg   |
|    |    | Stage 2 Complete  | 07/04/2017 10:13  | OR-01-05  | D-1-P1-012  |   | FD30S   |  Lgx1491223551469.jpg   |
|    |    | <b>Not Inspected</b>  | 10/11/2016 11:37  | OR-01-05  | D-1-P1-013  |   | NFR   |  8rp1491302674812.jpg   |
|    |    | Stage 2 Complete  | 07/04/2017 10:13  | OR-01-05  | D-1-P1-014-A  |   | FD30S   |  RYG1491302698037.jpg   |
|  |  | <b>Not Inspected</b>  | 10/11/2016 11:37  | OR-01-05  | D-1-P1-015  |   | NFR   |  xpl1491223622544.jpg |
|  |  | Stage 2 Complete  | 07/04/2017 10:13  | OR-01-05  | D-1-P1-016  | Moisture door 5% frame 12% 27/7/17  | FD30S   |  7CU1491223644516.jpg |
|  |  | <b>Not Inspected</b>  | 10/11/2016 11:37  | OR-01-05  | D-1-P1-019  | Moisture door 10% frame 12% 27/7/17   | FD60S   |  VIA1491223663116.jpg |
|  |  | Stage 2 Complete  | 02/05/2017 13:07  | OR-01-05  | D-1-P1-020  |   | NFR   |  51f1491223677985.jpg |
|  |  | <b>Not Inspected</b>  | 10/11/2016 11:37  | OR-01-05  | D-1-P1-020  | Moisture door 5% frame 13% 27/7/17  | NFR   |  Oak1491229993953.jpg |
|  |  | Stage 2 Complete  | 02/05/2017 13:07  | OR-01-05  | D-1-P1-020  | Moisture door 5% frame 13% 27/7/17  | FD60S   |  uVF1491230015866.jpg |
|  |  | <b>Not Inspected</b>  | 10/11/2016 11:37  | OR-01-05  | D-1-P1-020  | Moisture door 5% frame 13% 27/7/17  | NFR   |  tal1491230035101.jpg |
|  |  | Stage 2 Complete  | 02/05/2017 13:07  | OR-01-05  | D-1-P1-020  | Moisture door 5% frame 13% 27/7/17  | FD60S   |  Ou61491230051061.jpg |
|  |  | <b>Not Inspected</b>  | 10/11/2016 11:37  | OR-01-05  | D-1-P1-020  | Moisture door 5% frame 13% 27/7/17  | NFR   |  7O91493707987177.jpg |
|  |  | Stage 2 Complete  | 02/05/2017 13:07  | OR-01-05  | D-1-P1-020  | Moisture door 5% frame 13% 27/7/17  | FD60S   |  MWT1493708013045.jpg |



012



## CERTIFICATE OF REGISTRATION

This is to certify that

**MMM Joinery Ltd**

Taupo  
Edinburgh Road  
Braehead  
Lanarkshire  
ML11 8EU

Meets the requirements of the Exova BM TRADA scheme for **Q-Mark  
Fire Door Installation to STD052 - Issue 3 - 07/10/2015**

Approved Person



Certificate Number

1003

Date of Initial Certification

19 August 2016

Date of Last Issue

19 August 2016

Date of Expiry

18 August 2019

General Manager

Central Certification Services

Exova (UK) Ltd (T/A Exova BM TRADA), Chiltern House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4UD, UK  
Registered Office: Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian EH28 8PL United Kingdom. Reg No: SC070429.

This certificate remains the property of Exova (UK) Ltd. This certificate and all copies or reproductions of the certificate shall be returned to Exova (UK) Ltd or destroyed if requested. Further clarification regarding the scope of this certificate and verification of the certificate is available through Exova BM TRADA or at the above address or at [www.exovabmtrada.com](http://www.exovabmtrada.com)

The use of the UKAS accreditation mark indicates accreditation in respect of those activities covered by the accreditation certification 012



|                          |                           |                   |                  |
|--------------------------|---------------------------|-------------------|------------------|
| <b>Exova</b><br>BM TRADA | <b>AUDIT VISIT REPORT</b> | Company Name      | MMM Joinery Ltd  |
|                          |                           | Establishment No. | 052/17545. Irvin |

|                            |  |               |            |
|----------------------------|--|---------------|------------|
| <b>HEAD OFFICE ADDRESS</b> | <b>MMM Joinery Ltd</b><br>Taupo<br>Edinburgh Road<br>Braehead<br>Lanarkshire<br>ML11 8EU | Employees     | 0          |
|                            |  | Contact Name  | [REDACTED] |
|                            |  | Telephone     | [REDACTED] |
|                            |  | Fax           |            |
|                            |  | Email Address | [REDACTED] |

| No. of NCR's |       | ACTIVITY            | PLANNED DATE | No. DAYS | ACTUAL DATE | AUDITOR          |
|--------------|-------|---------------------|--------------|----------|-------------|------------------|
| Major        | Minor |                     |              |          |             |                  |
| 0            | 0     | site assessment     | 01/04/2016   | 1        | 17/08/2016  | Duncan Brickhill |
| 0            | 0     | Annual subscription | 01/02/2017   | 1        | 08/03/2017  | Paul Wren        |
|              |       | Annual subscription | 01/08/2017   | 1        |             |                  |
|              |       | Annual subscription | 01/02/2018   | 1        |             |                  |

|  |                               |  |      |
|--|-------------------------------|--|------|
| Exova BM TRADA Certificate Expiry Date | 18/08/2019                    | Exova BM TRADA Certificate Number        | 1003 |
| Scheme Name                            | Q-Mark Fire Door Installation |  |      |
| Standard                               | STD052 - Issue 3 - 07/10/2015 |  |      |
| EA Code                                | Scope of Certification        | [REDACTED] - Registered Installer No.428 |      |
| 6                                      |                               |  |      |
| AUDIT TEAM: Name/ role                 |                               | TEAM LEADER: [REDACTED] TEAM MEMBERS:    |      |

|  |
|--|
| <b>AUDITOR'S COMMENTS FOR Exova BM TRADA HEAD OFFICE ACTION</b>  |
| Site Address:- R.H.S.C. & DCN, Little France Crescent, Edinburgh |


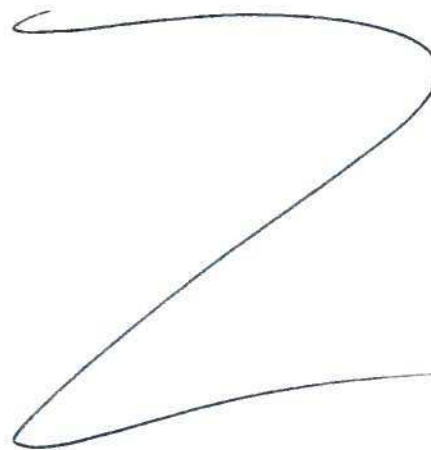
|  |                                     |
|--|-------------------------------------|
| <b>AUDITOR RECOMMENDATION FOR CERTIFICATION</b>  |                                     |
| Recommendation for Initial / Continued Certification   | <input checked="" type="checkbox"/> |
| Recommendation for Initial / Continued Certification subject to closure of Non-conformities. | <input type="checkbox"/>            |
| Re-visit required  | <input type="checkbox"/>            |
| Non-Recommendation / Suspension of Certification   | <input type="checkbox"/>            |

|  |   |
|--|---|
| <b>AUDIT TEAM LEADER SIGNATURE</b><br>[REDACTED] | <b>COMPANY REPRESENTATIVE SIGNATURE</b><br>[REDACTED] |
|--|---|


Please fully complete section 2 on all of the Non-conformity forms raised at this audit along with documentary evidence and email to [productcertification@exova.com](mailto:productcertification@exova.com) where the completed NCR forms will be sent to the auditor for review.

|   |      |  |                                     |
|---|------|--|-------------------------------------|
| <b>FOR THE USE OF EXOVA BM TRADA CERTIFICATION HEAD OFFICE ONLY</b> |      |  |                                     |
| AUDIT VERIFIER SIGNATURE  | DATE | Recommendation Endorsed                                  | Audit Rating                        |
|   |      | Yes <input type="checkbox"/> No <input type="checkbox"/> | Circle number for rating<br>1 2 3 4 |

|                          |                           |                   |                  |
|--------------------------|---------------------------|-------------------|------------------|
| <b>Exova</b><br>BM TRADA | <b>AUDIT VISIT REPORT</b> | Company Name      | MMM Joinery Ltd  |
|                          |                           | Establishment No. | 052/17545. Irvin |

|   |
|---|
| <p align="center"><b><u>Audit Summary</u></b></p> <p align="center">Audit Conclusions and General Comments for the client following completion of the audit.</p> <p>Good standard of work witnessed supported by required documentation</p> <p align="center"></p> |
| <p align="center"><b><u>Opportunities For Improvement (OFI)</u></b></p> <p align="center">Clearly number and identify each OFI separately below. These will be followed up as required at the next audit.</p> <p>None noted.</p> <p align="center"></p>          |

Please make copies of this page if more than one page needed

|   |                    |                   |                  |
|---|--------------------|-------------------|------------------|
|  | AUDIT VISIT REPORT | Company Name      | MMM Joinery Ltd  |
|   |                    | Establishment No. | 052/17545. Irvin |

## Important Information

- This Exova BM TRADA audit was based on a sampling approach and therefore non-conformities may exist which have not been identified.
- A copy of this report shall be distributed to the Exova BM TRADA audited company and to Exova BM TRADA.
- The ownership of this audit report is maintained by Exova BM TRADA.
- Exova BM TRADA shall keep confidential all information relating to this audit and your organisation and shall not disclose such information to any third party except as required by law or by Exova BM TRADA's Accreditation bodies.

## Guidance on Non-conformities and Timescales for action

### Major Non-conformities

Major non-conformities must be responded to within the agreed timescale shown on each non-conformity report and subsequently verified and closed by Exova BM TRADA within three months of issue.

Your auditor will clarify at the closing meeting if you require a follow up audit to verify correction and corrective action implementation or if documentary evidence will be acceptable to close the non-conformity.

Major non-conformities not closed within three months of issue will lead to the suspension of certification.

**Note:** Exova BM TRADA are unable to issue an initial or renewal certificate until all non-conformities have been verified and closed by Exova BM TRADA.

### Minor Non-conformities

Minor non-conformities must be responded to within the agreed timescale shown on each non-conformity report and subsequently verified and closed within twelve months of issue or at the next surveillance audit if this is sooner.

Your auditor will clarify at the closing meeting if you require a follow up audit to verify correction and corrective action implementation or if documentary evidence will be acceptable to close the non-conformity.

Minor non-conformities not closed within twelve months of issue or at the next surveillance audit if sooner, will lead to the non-conformity being escalated to a Major non-conformity.

**Note:** Exova BM TRADA are unable to issue an initial or renewal certificate until all non-conformities have been verified and closed by Exova BM TRADA.

Please submit all Major and Minor non-conformity responses along with documentary evidence to the following email address where they will be processed. If your responses are only sent to your auditor or client manager you may receive a further request from an administrator to submit your responses: [productcertification@exova.com](mailto:productcertification@exova.com)

### Opportunities For Improvement

Opportunities For Improvement are not non-conformities and do not have to be responded to immediately. Opportunities For Improvement are recommendations for improvement that if not addressed may lead to a non-conformity at future audits. All Opportunities For Improvement are stated on page two of the audit report.

If you have any questions in relation to your registration please contact our Operations Team:

Tel: 01494 569700; Email: [productcertification@exova.com](mailto:productcertification@exova.com)

Stocking Lane, Hughenden Valley, High Wycombe, Buckinghamshire, HP14 4ND Tel : 01494 569700 Fax: 01494 564895



## Programme

- Arrival and coffee
- Health and Safety Briefing
- Fire door maintenance – an introduction
- How the Fire Door Maintenance scheme operates
- Accepted Repair Techniques
- Brunch
- Carrying out repairs and maintenance
- Exercise
- Getting the most from your certification / Summary
- Questions
- Exam

INNOVATION TEAMWORK PERFORMANCE INTEGRITY

## Fire door maintenance

### Why carry out fire door maintenance?

#### Article 17 – RRFSO:

Fire safety provisions must be maintained in suitable condition and working order

#### Life safety and property protection:

Appropriate maintenance is necessary to ensure that a fire door will work correctly whenever it is required to do so

#### Economics:

Pro-active maintenance is a cost effective approach to fire safety

INNOVATION TEAMWORK PERFORMANCE INTEGRITY

## Fire door maintenance



### Maintenance

17. (1) Where necessary in order to safeguard the safety of relevant persons the responsible person must ensure that the premises and any facilities, equipment and devices provided in respect of the premises under this Order or, subject to paragraph (6), under any other enactment, including any enactment repealed or revoked by this Order, are subject to a suitable system of maintenance and are maintained in an efficient state, in efficient working order and in good repair.

(2) Where the premises form part of a building, the responsible person may make arrangements with the occupier of any other premises forming part of the building for the purpose of ensuring that the requirements of paragraph (1) are met.

(3) Paragraph (2) applies even if the other premises are not premises to which this Order applies.

(4) The occupier of the other premises must co-operate with the responsible person for the purposes of paragraph (2).

(5) Where the occupier of the other premises is not also the owner of those premises, the references to the occupier in paragraphs (2) and (4) are to be taken to be references to both the occupier and the owner.

(6) Paragraph (1) only applies to facilities, equipment and devices provided under other enactments where they are provided in connection with general fire precautions.

INNOVATION TEAMWORK PERFORMANCE INTEGRITY

## Fire door maintenance



What is required in terms of maintenance?

Article 18:

The responsible person must appoint a competent person(s) to assist in meeting their duties under the fire safety order for ensuring fire safety measures are kept in working order

Periodic inspection, repair and adjustment - when required?

ASAP after installation (maximum 6 months), then 6 to 12 monthly intervals depending on use

INNOVATION TEAMWORK PERFORMANCE INTEGRITY

## Fire door maintenance



What is required in terms of maintenance?

### Safety assistance

18. (1) The responsible person must, subject to paragraphs (6) and (7), appoint one or more competent persons to assist him in undertaking the preventive and protective measures.

(2) Where the responsible person appoints persons in accordance with paragraph (1), he must make arrangements for ensuring adequate co-operation between them.

(3) The responsible person must ensure that the number of persons appointed under paragraph (1), the time available for them to fulfil their functions and the means at their disposal are adequate having regard to the size of the premises, the risks to which relevant persons are exposed and the distribution of those risks throughout the premises.

(4) The responsible person must ensure that –

(a) any person appointed by him in accordance with paragraph (1) who is not in his employment –

INNOVATION TEAMWORK PERFORMANCE INTEGRITY

## Fire door maintenance



How to demonstrate competence to carry out fire door maintenance:

Maintainer must have sufficient training and experience or knowledge and other qualities to enable him to properly assist.....

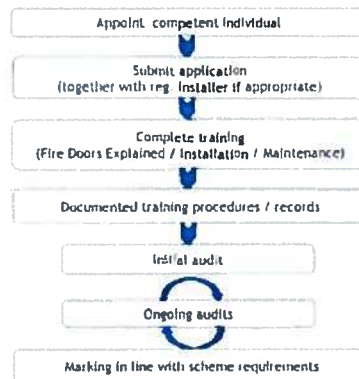
- One off training?
- Ongoing training as part of professional development?
- 1<sup>st</sup> party inspection (i.e. internal inspection)?
- 2<sup>nd</sup> party inspection (e.g. by a supplier)?
- 3<sup>rd</sup> party certification (e.g. by Exova BM TRADA)?

3<sup>rd</sup> party certification by a recognised body provides a higher level of confidence to both the building owner and the maintainer

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## How does the scheme operate?



Members of the maintenance scheme must also fully understand the principles of installation

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## Assumptions on doorset history



Maintenance is carried out on the basis that the doorset history is as follows:

- ✓ It was originally manufactured and installed as a fire resisting doorset
- ✓ It was originally installed correctly with appropriate fire stopping to rear of frame and structural opening
- ✓ The appropriate door frame material was used for the doorset and for the period of fire resistance
- ✓ The structural opening is appropriate for the period of fire resistance
- ✓ The intumescent materials and hardware were correct at the time of installation
- ✓ Ongoing maintenance / repair work has been conducted correctly without changing the specification of the doorset or affecting any of the above assumptions

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## Assumptions on doorset history



Assumptions should be checked where practical, particularly where there is evidence that the assumptions cannot be made.

Steps should be taken to rectify the issues found, but it is important that responsibility is not assumed for all aspects of the doorset performance.

Re-instatement to as-found specification, ideally supported by appropriate fire resistance documentation (plugs, labels, test reports, assessments). If in doubt seek advice from competent body e.g. UKAS accredited laboratory

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## Acceptance of survey / scheme procedures



Survey Acceptance Form includes caveats regarding the scheme:

Template contract terms produced covering:

- Requirement for the client to provide details of doors which should be fire doors
- Terms under which the survey and inspection is conducted
- Assumptions made on the history of the doorset
- The approach taken to verify fire stopping behind the architrave
- Terms under which repairs / maintenance are carried out

The responsible person will need to agree the approach taken as part of the scheme in order for the maintenance work to be covered by the scheme.

The contract terms are designed to ensure that the responsible person understands both the limitations of the scheme, and that they are not transferring their responsibilities to the maintainer.

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## Fire door maintenance



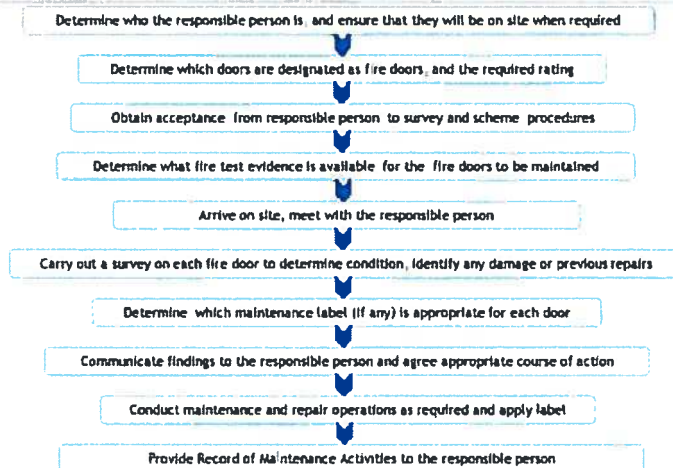
On-site audits – what is covered?

Verification of:

- Maintained doors
- Process undertaken when assessing the doorset
- Training records
- Supporting documentation obtained
- Application / understanding of Accepted Repair Techniques (ART)
- Correct completion of scheme documentation
- Correct labelling
- Staff competence

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## Process for conducting maintenance



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**EXOVO**  
SMA 1000

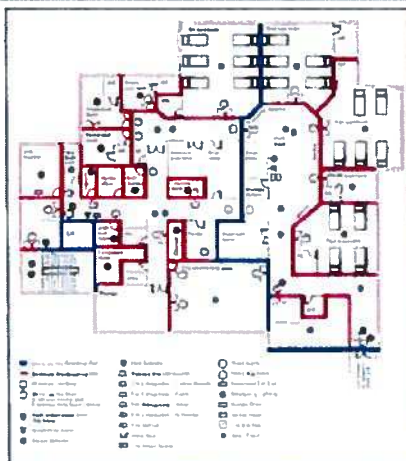
Even a basic risk assessment should include compartment lines and doors within those compartment lines. This is likely to be presented as a floor plan.

Under the RRFSO this type of information must be readily available for inspection by the enforcing authority.

Maintenance personnel should not be tasked with identifying which doors need to be fire resisting – this is the role of the risk assessor.

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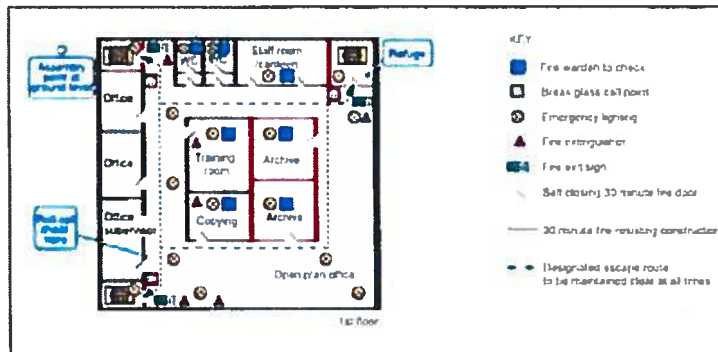
**Exova**  
S-1 PANDA



Taken from CLG guide Health  
Care Premises (fig 12)

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## What information should you expect to find in a risk assessment?



Taken from CLG Guide – Offices and Shops (fig 12)

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## What information should you expect to find in a risk assessment?



Identification of fire doors based on the fire risk assessment – 30 or 60 minutes fire resistance?

In the absence of a coding/labelling system, the maintenance programme would be an ideal opportunity to introduce one - asset management

Being told that they all need to be maintained as fire doors is not only unhelpful but likely to incur a great deal of additional expense i.e. replacement of non-rated doors and specialist maintenance and repair work

Spend money only where it is required!

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## Fire door maintenance



### Supporting documentation?

Test evidence  
Assessment reports  
Door plugs/labels

### What if there isn't any supporting documentation?

Building plans  
Purchase orders (i.e. was the door originally purchased as a fire door?)  
Specification of the doorset?  
Fire Precautions Act and certificates  
Expert advice?

Without supporting documentation there is a reduced level of confidence in the performance of the product

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## Fire door maintenance



### Survey Acceptance:

One of the scheme requirements is to recommend a survey of the fire stopping behind the architraves on a sample of the doorsets on site

Action to be taken regarding fire stopping depends on findings of initial survey

Obtain responsible person's consent to the survey or formally record their rejection

The screenshot shows a digital survey form titled "Fire door survey". It includes sections for "Survey details", "Survey findings", and "Survey actions". The "Survey findings" section has a table with columns for "Location", "Findings", and "Actions". The "Survey actions" section has a table with columns for "Action", "Responsible person", and "Due date".

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## Fire door maintenance



### Survey & Scheme Procedures

Responsible person also agrees to the terms and conditions of the Survey & Scheme Procedures on the reverse of or attached to the Survey and Scheme Procedures Acceptance Form

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## Fire door maintenance



**Prior to carrying out maintenance under the scheme:**  
(To be recorded in the "Survey & Inspection" section of the RMA form)

**Establish which doorsets are supposed to be fire doors (plus rating)**

- Information should be available from the responsible person (probably via a floor plan, or a walk round the building)
- Log of fire doors to be created, including rating, reference number

**Establish whether the designated doorsets are actually fire doors**

- Supporting documentation to show that they are fire doors
- Independent survey (from UKAS accredited laboratory)
- Limited confidence when no documentation is available

**Determine which grading level will be applicable for the maintenance label and communicate to building owner / manager**

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## Fire door maintenance



Record of Maintenance Activities (RMA) form :

To be used to provide a summary for the site

Allows details of initial evidence gathering, summary of the survey and the maintenance conducted to be recorded

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## Fire door maintenance



Record of Maintenance Activities: Survey and Inspection

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## Fire Door Maintenance



### Pre-maintenance survey:

#### For each door:

- Is damage present?
- Which Accepted Repair Techniques (ART) apply?  
(see decision tree if ART not applicable)
- What operational adjustment is required?
- Is door gap adjustment required
- Is component replacement required  
(refer to evidence for specification / replace with identical specification)

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## Fire door maintenance



### Doorset Survey:

Use the "Doorset Survey" Form to record the details of individual doorsets

Survey of each doorset to be maintained should be completed and recorded using this form

Door Reference number allows this document to be linked to the RMA form

The image shows a screenshot of a 'Doorset Survey' form. It includes a header with the Exova logo and a title 'Doorset Survey'. Below the title, there are fields for 'To: [Name]', 'By: [Name]', and 'Date: [Date]'. The main part of the form is a table with columns for 'Door Reference Number', 'Doorset Description', and various inspection criteria. The table has multiple rows for data entry. At the bottom, there are fields for 'Survey Date', 'Inspector', and 'Date'.

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## Fire door maintenance



### Guidance Notes for the Doorset Survey Form:

Clarifies what is expected for each section of the form

INNOVATION TEAMWORK PERFORMANCE INTEGRITY

## Fire door maintenance



### Survey of Fire stopping:

Use the "Survey of Fire stopping" Form to record the details of individual doorsets

Samples of doorsets should be checked to verify fire stopping behind the architrave

Appropriate risk assessment should be conducted

Suggested sample of 10% of a similar batch of doors checked, with further checks if problems are identified

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## Fire door maintenance



### Guidance Notes for the Survey of Fire Stopping Form:

Clarifies what is expected for each section of the form

The form is titled 'Survey of Fire Stopping Form' and includes a table with the following sections:

| Section                  | Details   |
|--------------------------|---|
| 1. General Information   | Building name, address, and contact details.                              |
| 2. Fire Stopping Details | Details of fire stopping materials, locations, and condition.             |
| 3. Surveyor's Comments   | Notes on the survey, including any issues identified and recommendations. |
| 4. Signatures            | Signatures of the surveyor and the responsible person.                    |

Below the table, there is a section for 'Notes' and a 'Total Score' field.

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## Fire door maintenance



### What if the specification of the doorset is wrong against the rating or the fire test evidence?

Specification of the doorset does not match the presented test evidence or is not in line with normal specification for the rating:

- 44mm thick door leaf where rating should be FD60
- Over-sized glazing
- Wrong intumescent (e.g. 10 x 4mm fitted instead 15 x 4mm)
- Softwood frame on an FD60
- Metal wrap around plates on edge of door

#### Action to take:

- Formally notify the responsible person
- Suggest independent inspection where appropriate
- Minor remedial work to restore to tested specification if practical
- If not rectified, withhold maintenance label, but record on the RMA form

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## Accepted Repair Techniques



This is a list of repairs which are acceptable under the scheme. Where a proposed repair is covered by an Accepted Repair Technique (ART), the repair may be undertaken, then normal maintenance conducted on the doorset.

Where an Accepted Repair Technique is not available, a Project Specific Repair Technique may be commissioned, or a fire test may be conducted to verify performance.

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The screenshot shows a detailed form for recording repair work. It includes fields for 'ART Details', 'Description of Work', 'Materials and Components', 'Installation Details', 'Testing and Certification', and 'Sign-off'. There is a table for 'Materials and Components' with columns for 'Material', 'Quantity', and 'Unit'. The 'Sign-off' section has checkboxes for 'Approved' and 'Not Approved'.

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## Fire door maintenance



### Repair / Maintenance:

#### Repair and maintenance operations:

- Conduct General Maintenance Techniques using ARTs where applicable
- Records kept using the RMA form
- Designated label placed on doorset
- RMA form completed and signed
- RMA form provided to the responsible person to confirm maintenance operations complete

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## Fire door maintenance



### General Maintenance Techniques:

1. Check / repair door leaf / frame (ART)
2. Check / repair seals (ART)
3. Check / repair glazing (ART)
4. Check / repair / adjust hardware (ART)
5. Check / adjust door gaps (ART)
6. Check a sample of fire stopping behind architraves where possible – report to responsible person if remedial work required.
7. Lubricate hardware and ensure the doorset operates correctly.

See ASDMA Maintenance Guide for more details of operations to be undertaken as part of a maintenance program

<http://www.asdma.com/pdf/maintenancelit2.pdf>

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### Record of Maintenance Activities: Maintenance Section

[illegible]

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## Record of Maintenance Activities: Completed Example

**Q-Mark Fire Door Maintenance Scheme**  
**Record of Maintenance Activities Form**

**Job No.** \_\_\_\_\_ **Date** \_\_\_\_\_ **Inspector** \_\_\_\_\_

**Inspector's Signature** \_\_\_\_\_

**Inspection**

**Repair**

**Replacement**

**Signature**

**P. Jones**

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## Fire door maintenance



### Record of Maintenance Activities:

- To be issued to the Responsible Person
- Copy to be retained by maintainer and available for inspection during audits

**Q-Mark Fire Door Maintenance Scheme**  
Record of Maintenance Activities Form

Form for recording maintenance activities. Includes fields for: Name of Responsible Person, Date of Issue, Date of Next Maintenance, and a table for recording individual door inspections.

| Door Ref. | Location of Door | Inspection Date | Inspection By | Inspection Result | Next Maintenance Date | Next Maintenance By |
|-----------|------------------|-----------------|---------------|-------------------|-----------------------|---------------------|
| 1001      | Entrance         | 10/10/10        | J. Smith      | Pass              | 10/10/11              | J. Smith            |
| 1002      | Entrance         | 10/10/10        | J. Smith      | Pass              | 10/10/11              | J. Smith            |
| 1003      | Entrance         | 10/10/10        | J. Smith      | Pass              | 10/10/11              | J. Smith            |
| 1004      | Entrance         | 10/10/10        | J. Smith      | Pass              | 10/10/11              | J. Smith            |
| 1005      | Entrance         | 10/10/10        | J. Smith      | Pass              | 10/10/11              | J. Smith            |
| 1006      | Entrance         | 10/10/10        | J. Smith      | Pass              | 10/10/11              | J. Smith            |
| 1007      | Entrance         | 10/10/10        | J. Smith      | Pass              | 10/10/11              | J. Smith            |
| 1008      | Entrance         | 10/10/10        | J. Smith      | Pass              | 10/10/11              | J. Smith            |
| 1009      | Entrance         | 10/10/10        | J. Smith      | Pass              | 10/10/11              | J. Smith            |
| 1010      | Entrance         | 10/10/10        | J. Smith      | Pass              | 10/10/11              | J. Smith            |

For further information contact us via [www.qmark.co.uk](http://www.qmark.co.uk)

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## Maintenance scheme - label/card



Level:

Fire Door Maintenance

**Q-MARK**

Door ref:

Name:

Signed:

Cert No.:

Date:

Next maintenance:

For further information contact us via [www.qmark.co.uk](http://www.qmark.co.uk)

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## Maintenance scheme - label/card



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## Fire door maintenance



### Applying the label:

The label should be applied on the hinge side of the door leaf, below the top hinge, but not obscuring any door plugs.

The label should be relatively prominent to serve as a reminder for when further maintenance is due.



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## Damage not covered by ART



### Options:

- Project Specific Repair Technique  
(at additional cost)
- Test a proposed repair technique?
- Beyond Economical Repair?



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## Previous repairs



What action do you take when you find a doorset that has previously been repaired?

### Repairs conducted under the maintenance scheme:

If conducted in line with an ART, Project Specific Repair, or to test evidence, then these are deemed acceptable and a maintenance label may be used if all other aspects of the doorset are ok

### Repairs that need to be re-done in line with an ART, Project Specific Repair, or to test evidence:

Once you have completed the work, a maintenance label may be used if all other aspects of the doorset are ok.

### All other repairs:

Complete the maintenance work if appropriate but don't use a label

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# Temporary repairs

Temporary repairs are outside of the scope of the scheme

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## Refresher on 'Fire Doors Explained'

Concentrate on issues raised in the fire test

Anatomy of fire doors

Glazing

Angle of pins

Bead shape / profile and reasons for the shape

Bead material

Intumescent liners

Intumescent

Pressure forming / non-pressure forming

Graphite / Sodium silicate (palusol)

Essential hardware

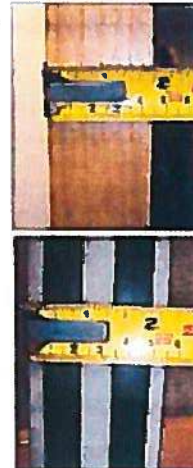
Non-essential hardware

Rules of thumb

44 / 54mm


Softwood / hardwood

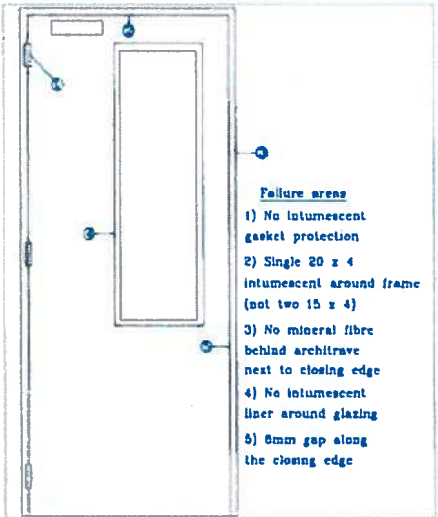
Intumescent size



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Failure areas

- 1) No intumescent gasket protection
- 2) Single 20 x 4 intumescent around frame (not two 15 x 4)
- 3) No mineral fibre behind architrave next to closing edge
- 4) No intumescent liner around glazing
- 5) 6mm gap along the closing edge

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## Refresher on 'Fire Doors Explained'

**Installation**

- Fire stopping materials / sealing to structural opening
- Fixings
- Door gaps
- Operational checks

**General Maintenance Techniques**

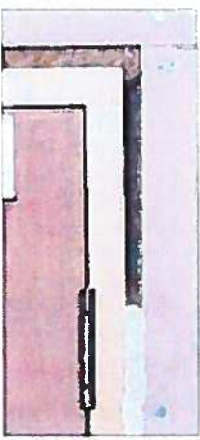
- Release hold open devices
- Lubrication of hardware
- Operational checks

**Smoke Control and threshold gaps**

- 3mm gap, smoke seals, drop down threshold seals

**Test Reports / Role of Assessments**

- Fire testing is an option in absence of evidence



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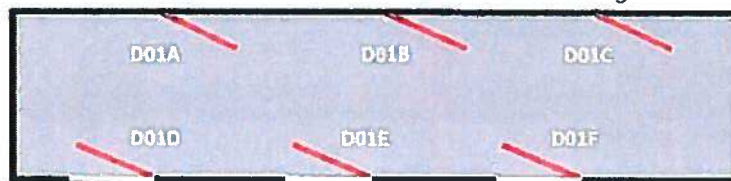
## Exercise: Fire doors within a school corridor



The purpose of this exercise is to determine what actions you would take when presented with various test evidence for doorsets which are to be subject to maintenance.

Complete the RMA form as if you have inspected, surveyed and maintained the Doorsets and state what action you would take.

Floor Plan – Ground floor corridor. All doorsets stated as being FD60



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## Evidence presented:



### Doorset ref: D01A

The records presented state that this doorset is covered by the Fire Doors Explained specimen test report and dummy global assessment - report reference [FEA/F09417]. No damage appears to be present in this doorset

*Specification: Solid core 54mm door leaf, hardwood frame, hardwood lippling to all edges, 20 x 4mm palusol intumescent strips fitted round the door leaf, georgian wired glazing to the upper part of the leaf.*

### Doorset ref: D01B

No test evidence is available for this doorset. You have been told that this is a 60 minute doorset. The specification of the doorset is as follows:

*Traditional joinery panelled doorset, 44mm thick leaf, two 10 x 4mm intumescent strips fitted to the perimeter of the leaf, georgian wired glazing to the upper part of the leaf.*

### Doorset ref: D01C


The records presented state that this doorset is covered by the Fire Doors Explained specimen test report and dummy global assessment - report reference [FEA/F09417].

The glazing on this doorset has clearly been replaced previously, with glass and beads of a specification which cannot be determined.

*Specification: Solid core 54mm door leaf, hardwood frame, hardwood lippling to all edges, 20 x 4mm palusol intumescent strips fitted round the door leaf, glazing to the upper part of the leaf, that looks to have been replaced, with an undetermined specification.*

The doorset has been damaged and has a crack which appears to run the full thickness of the leaf at least halfway across the width of the door leaf.

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## Evidence presented:

**Doorset ref: D01D**  
 This FD60 doorset does not have an accompanying test report or global assessment. However, a previous maintainer has a Project Specific Assessment from Chiltern International Fire. The specification in the assessment appears to match that on site.  
*Specification: Panelled door leaf, 58mm thick, two 15 x 4mm Intumescent strips round the perimeter of the leaf, hardwood frame, georgian wired glazing.*

**Doorset ref: D01E**  
 The records presented state that this doorset is covered by the Fire Doors Explained specimen test report and dummy global assessment - report reference [FEA/F09417].  
 The doorset has been damaged in that it has broken glazing and a damaged lipping. A kick plate has also been wrapped around the edge of the door to cover the damage to the lipping.  
*Specification: Solid core 54mm door leaf, hardwood frame, hardwood lipping to all edges, 20 x 4mm palusol intumescent strips fitted round the door leaf, georgian wired glazing to the upper part of the leaf. Wrap around kick plate fitted.*

**Doorset ref: D01F**  
 This doorset is has door plugs fitted to show that it was manufactured and installed under the Exova BM TRADA Q Mark Fire Door Manufacturer and Installer Scheme. However, there is no test evidence on file for the doorset.

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## Identification card



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# Marketing tools designed to promote your Exova BM TRADA Q-Mark certification

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**Exova BM TRADA Q Mark marketing tools**

**Q Mark Certification**  
 Spreading the word

INNOVATION TEAMWORK PERFORMANCE INTEGRITY



## Exova BM TRADA Q-Mark marketing tools



### Website

Company profile/listing on Exova BM TRADA website

### Sales support materials

Brochures promoting Exova BM TRADA Q-Mark certification

Tips on how to win more business with Exova BM TRADA Q-Mark certification

Press Release writing service

### The certification mark

Vehicle vinyls

Use on letterhead

### Existing Customers

Opportunity to put Exova BM TRADA Q-Mark into their specification?

INNOVATION TEAMWORK PERFORMANCE INTEGRITY

## Summary



Reasons for maintenance

Decision Process

Accepted Repair Techniques

Assumptions on previous history

3<sup>rd</sup> party certification to demonstrate competence

Benefits of Q-Mark

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## Examination



60 Minutes

Good luck!

INNOVATION TEAMWORK PERFORMANCE INTEGRITY

9E

Air Tightness

Brookfield  
MULTI-PLEX  
Built to outperform

190416

Backlink

complete

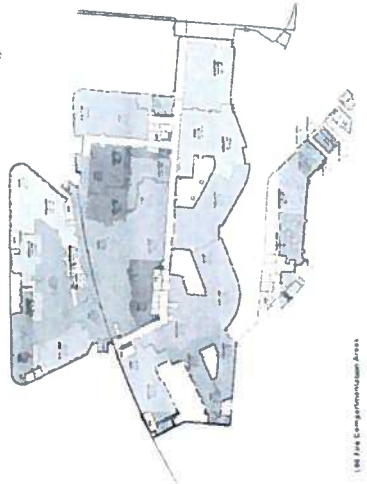
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7.11/9/17

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5.28/8/17



| Room No. | Room Name            | Area (sqm) | Volume (cu m) | Notes |
|----------|----------------------|------------|---------------|-------|
| 101      | Reception            | 120        | 360           |       |
| 102      | Waiting Area         | 150        | 450           |       |
| 103      | Consultation         | 180        | 540           |       |
| 104      | Examination          | 200        | 600           |       |
| 105      | Procedure Room       | 250        | 750           |       |
| 106      | Operating Theatre    | 300        | 900           |       |
| 107      | Recovery Room        | 220        | 660           |       |
| 108      | ICU                  | 280        | 840           |       |
| 109      | CCU                  | 240        | 720           |       |
| 110      | Specialist Clinic    | 160        | 480           |       |
| 111      | Physiotherapy        | 140        | 420           |       |
| 112      | Occupational Therapy | 120        | 360           |       |
| 113      | Speech Therapy       | 100        | 300           |       |
| 114      | Pharmacy             | 180        | 540           |       |
| 115      | Radiology            | 200        | 600           |       |
| 116      | Pathology            | 150        | 450           |       |
| 117      | Microbiology         | 120        | 360           |       |
| 118      | Immunology           | 100        | 300           |       |
| 119      | Endocrinology        | 120        | 360           |       |
| 120      | Neurology            | 150        | 450           |       |
| 121      | Cardiology           | 180        | 540           |       |
| 122      | Respiratory          | 160        | 480           |       |
| 123      | Gastroenterology     | 140        | 420           |       |
| 124      | Hepatology           | 120        | 360           |       |
| 125      | Nephrology           | 100        | 300           |       |
| 126      | Oncology             | 200        | 600           |       |
| 127      | Radiotherapy         | 250        | 750           |       |
| 128      | Chemotherapy         | 180        | 540           |       |
| 129      | Immunotherapy        | 150        | 450           |       |
| 130      | Targeted Therapy     | 120        | 360           |       |
| 131      | Supportive Care      | 100        | 300           |       |
| 132      | Palliative Care      | 120        | 360           |       |
| 133      | End of Life Care     | 100        | 300           |       |
| 134      | Bereavement Support  | 80         | 240           |       |
| 135      | Religious Support    | 60         | 180           |       |
| 136      | Chaplaincy           | 40         | 120           |       |
| 137      | Prayer Room          | 30         | 90            |       |
| 138      | Restroom             | 20         | 60            |       |
| 139      | Storage              | 100        | 300           |       |
| 140      | Wardens Office       | 50         | 150           |       |
| 141      | Security Office      | 40         | 120           |       |
| 142      | IT Office            | 30         | 90            |       |
| 143      | Finance Office       | 20         | 60            |       |
| 144      | HR Office            | 20         | 60            |       |
| 145      | Legal Office         | 20         | 60            |       |
| 146      | Compliance Office    | 20         | 60            |       |
| 147      | Quality Office       | 20         | 60            |       |
| 148      | Research Office      | 20         | 60            |       |
| 149      | Education Office     | 20         | 60            |       |
| 150      | Library              | 100        | 300           |       |

Re-provision of RHSC  
and DCN at Little  
France

NHS  
Lothian

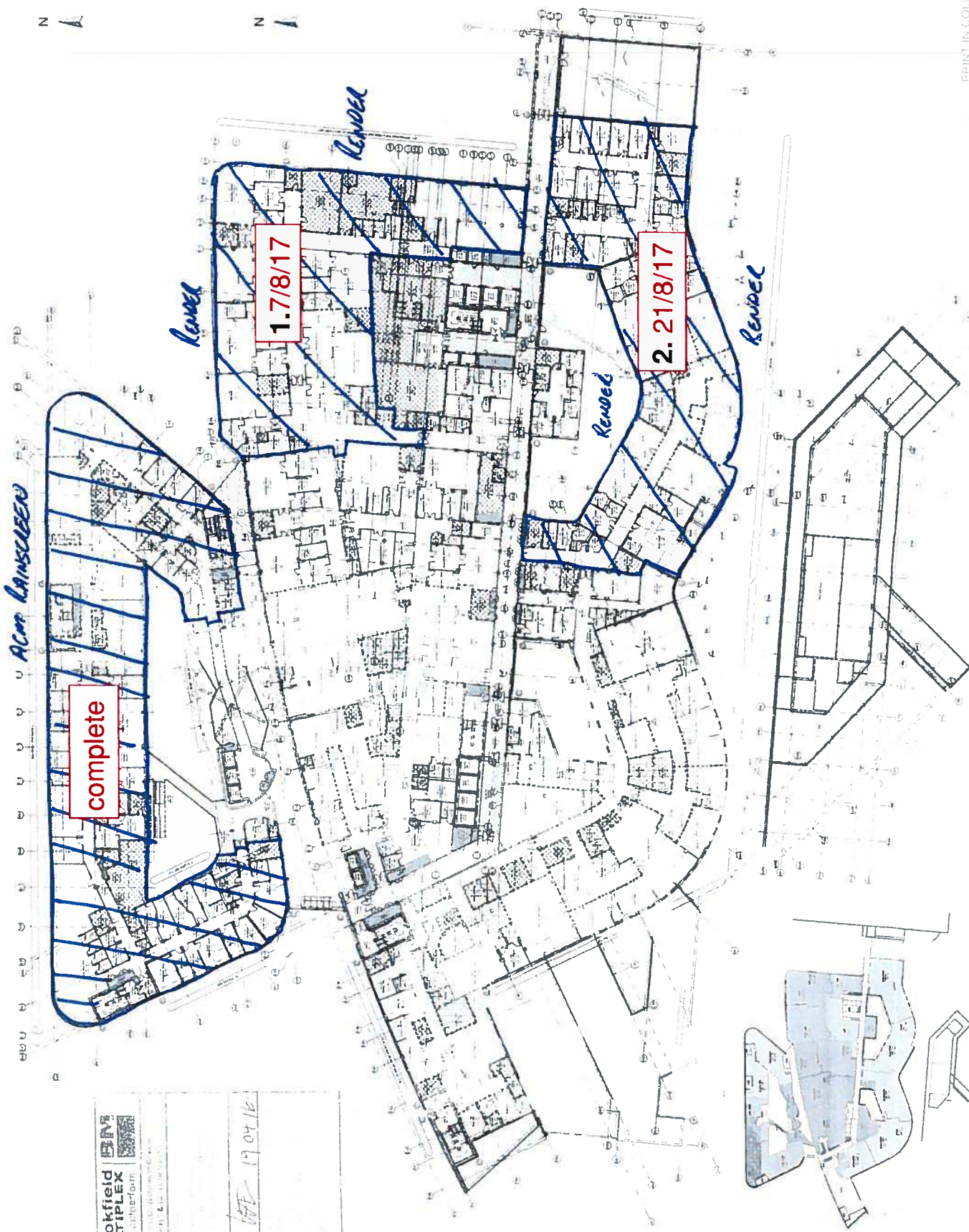
GROUND FLOOR FIRE  
AND GENERAL  
ARRANGEMENT

DATE: 19/04/16  
TYPE: 1:100  
SCALE: 1:100

IHS LOTHIAN

PRINT IN COLOUR







| Room No. | Room Name                  | Area (sqm) | Volume (cu m) | Fire Risk Rating | Fire Protection                           | Escape Route | Access   | Notes |
|----------|----------------------------|------------|---------------|------------------|---|--------------|----------|-------|
| 101      | Reception                  | 120        | 1200          | Low              | Smoke Detector                            | Staircase    | External |       |
| 102      | Waiting Area               | 150        | 1500          | Low              | Smoke Detector                            | Staircase    | External |       |
| 103      | Consultation Room          | 80         | 800           | Low              | Smoke Detector                            | Staircase    | External |       |
| 104      | Examination Room           | 100        | 1000          | Low              | Smoke Detector                            | Staircase    | External |       |
| 105      | Procedure Room             | 120        | 1200          | Low              | Smoke Detector                            | Staircase    | External |       |
| 106      | Recovery Room              | 150        | 1500          | Low              | Smoke Detector                            | Staircase    | External |       |
| 107      | Operating Room             | 200        | 2000          | Medium           | Smoke Detector, Fire Alarm                | Staircase    | External |       |
| 108      | Post Anaesthesia Care Unit | 180        | 1800          | Medium           | Smoke Detector, Fire Alarm                | Staircase    | External |       |
| 109      | Intensive Care Unit        | 250        | 2500          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 110      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 111      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 112      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 113      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 114      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 115      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 116      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 117      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 118      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 119      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 120      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |

| Room No. | Room Name                  | Area (sqm) | Volume (cu m) | Fire Risk Rating | Fire Protection                           | Escape Route | Access   | Notes |
|----------|----------------------------|------------|---------------|------------------|---|--------------|----------|-------|
| 201      | Reception                  | 120        | 1200          | Low              | Smoke Detector                            | Staircase    | External |       |
| 202      | Waiting Area               | 150        | 1500          | Low              | Smoke Detector                            | Staircase    | External |       |
| 203      | Consultation Room          | 80         | 800           | Low              | Smoke Detector                            | Staircase    | External |       |
| 204      | Examination Room           | 100        | 1000          | Low              | Smoke Detector                            | Staircase    | External |       |
| 205      | Procedure Room             | 120        | 1200          | Low              | Smoke Detector                            | Staircase    | External |       |
| 206      | Recovery Room              | 150        | 1500          | Low              | Smoke Detector                            | Staircase    | External |       |
| 207      | Operating Room             | 200        | 2000          | Medium           | Smoke Detector, Fire Alarm                | Staircase    | External |       |
| 208      | Post Anaesthesia Care Unit | 180        | 1800          | Medium           | Smoke Detector, Fire Alarm                | Staircase    | External |       |
| 209      | Intensive Care Unit        | 250        | 2500          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 210      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 211      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 212      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 213      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 214      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 215      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 216      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 217      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 218      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 219      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |
| 220      | ICU                        | 200        | 2000          | High             | Smoke Detector, Fire Alarm, Gas Detection | Staircase    | External |       |

Re-provision of RHSC  
PHSDCN at Little  
France

NHS  
Lothian

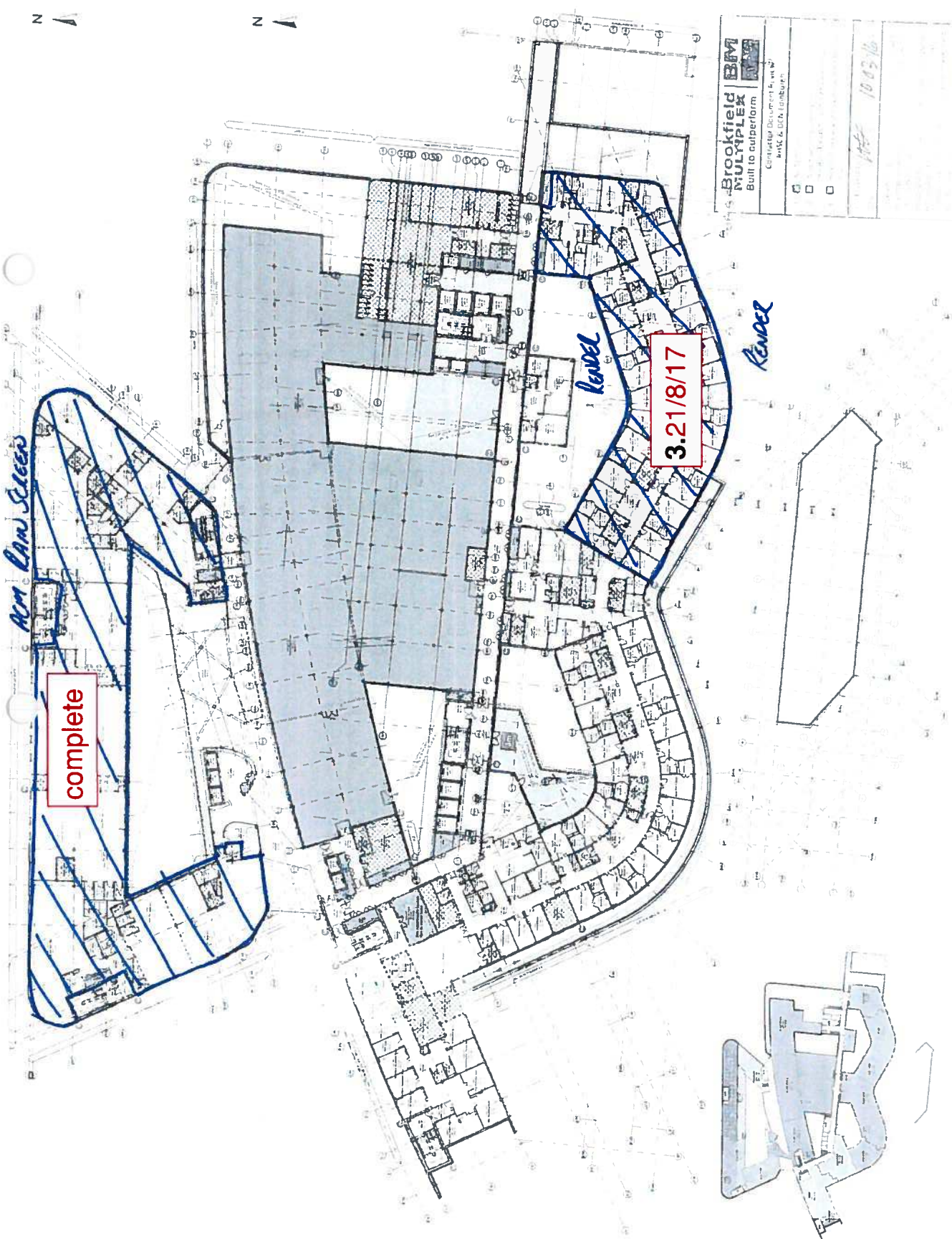
SECOND FLOOR FIRE  
STRATEGY GENERAL  
ARRANGEMENT

10/03/16

780370-4

Page 10 of 10 (continued)

IHS LOTHIAN



|  |  |          |
|--|--|----------|
| <b>Brookfield BM</b><br><b>Multiplex</b><br>Built to outperform<br>Certified Document 1, v1.0<br>BMS & BFA (BFA) | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/> | 10/03/16 |
|--|--|----------|



ACM LAMINATE

complete

6.4/9/17

Renov

Renov

14.04/16

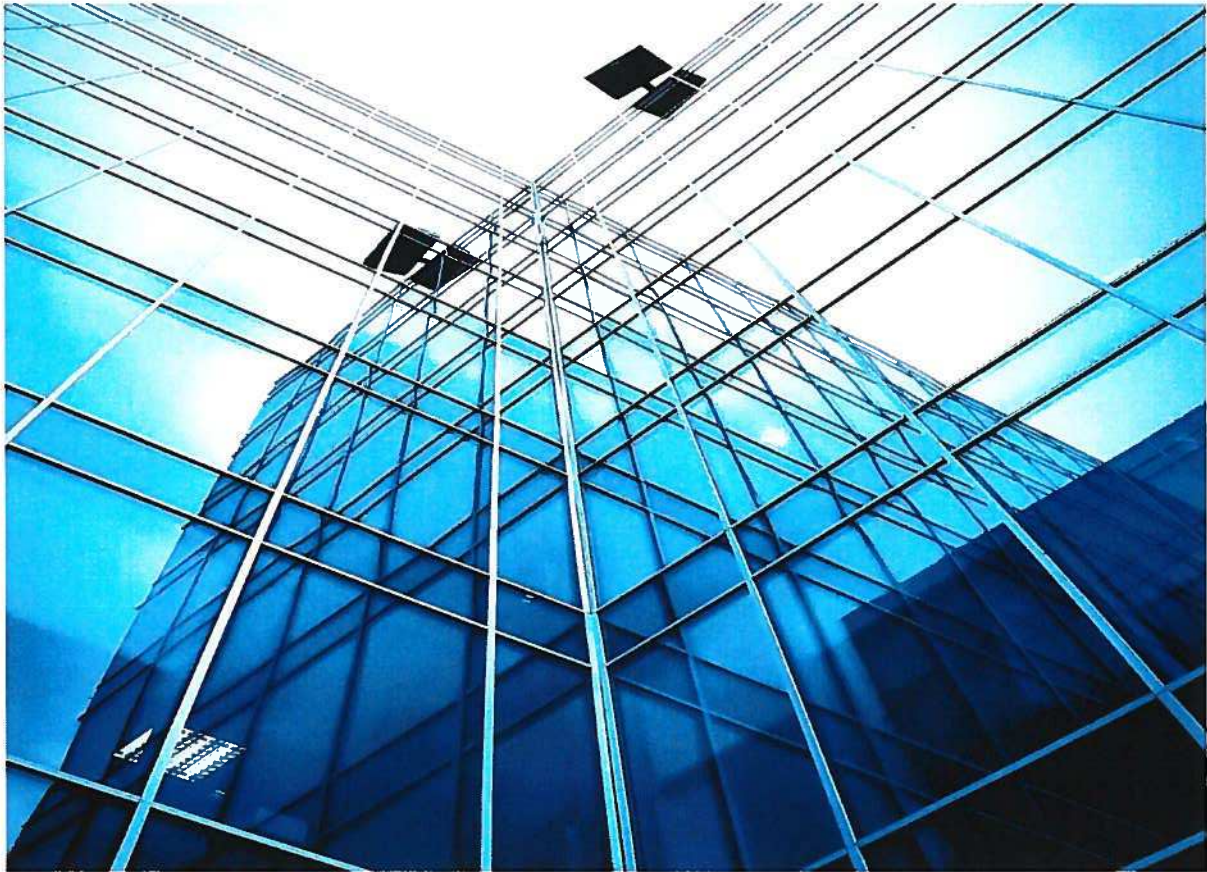
| Room No. | Room Name         | Area (sq m) | Volume (cu m) | Notes |
|----------|-------------------|-------------|---------------|-------|
| 101      | Reception         | 10.0        | 30.0          |       |
| 102      | Waiting Area      | 20.0        | 60.0          |       |
| 103      | Consultation      | 15.0        | 45.0          |       |
| 104      | Examination       | 12.0        | 36.0          |       |
| 105      | Procedure Room    | 25.0        | 75.0          |       |
| 106      | Operating Theatre | 40.0        | 120.0         |       |
| 107      | Recovery Room     | 20.0        | 60.0          |       |
| 108      | ICU               | 30.0        | 90.0          |       |
| 109      | HDU               | 25.0        | 75.0          |       |
| 110      | Ward              | 50.0        | 150.0         |       |
| 111      | Ward              | 40.0        | 120.0         |       |
| 112      | Ward              | 30.0        | 90.0          |       |
| 113      | Ward              | 20.0        | 60.0          |       |
| 114      | Ward              | 15.0        | 45.0          |       |
| 115      | Ward              | 10.0        | 30.0          |       |
| 116      | Ward              | 8.0         | 24.0          |       |
| 117      | Ward              | 6.0         | 18.0          |       |
| 118      | Ward              | 4.0         | 12.0          |       |
| 119      | Ward              | 2.0         | 6.0           |       |
| 120      | Ward              | 1.0         | 3.0           |       |

| Room No. | Room Name         | Area (sq m) | Volume (cu m) | Notes |
|----------|-------------------|-------------|---------------|-------|
| 201      | Reception         | 10.0        | 30.0          |       |
| 202      | Waiting Area      | 20.0        | 60.0          |       |
| 203      | Consultation      | 15.0        | 45.0          |       |
| 204      | Examination       | 12.0        | 36.0          |       |
| 205      | Procedure Room    | 25.0        | 75.0          |       |
| 206      | Operating Theatre | 40.0        | 120.0         |       |
| 207      | Recovery Room     | 20.0        | 60.0          |       |
| 208      | ICU               | 30.0        | 90.0          |       |
| 209      | HDU               | 25.0        | 75.0          |       |
| 210      | Ward              | 50.0        | 150.0         |       |
| 211      | Ward              | 40.0        | 120.0         |       |
| 212      | Ward              | 30.0        | 90.0          |       |
| 213      | Ward              | 20.0        | 60.0          |       |
| 214      | Ward              | 15.0        | 45.0          |       |
| 215      | Ward              | 10.0        | 30.0          |       |
| 216      | Ward              | 8.0         | 24.0          |       |
| 217      | Ward              | 6.0         | 18.0          |       |
| 218      | Ward              | 4.0         | 12.0          |       |
| 219      | Ward              | 2.0         | 6.0           |       |
| 220      | Ward              | 1.0         | 3.0           |       |

Re-provision of RHSC and DCN at Little France

NHS Lothian  
THIRD FLOOR FIRE STRATEGY GENERAL ARRANGEMENT

IHS IOTHAT



**Multiplex Construction Europe Ltd**

**ZONE OR-00-01+02  
ROYAL HOSPITAL FOR SICK CHILDREN  
EDINBURGH**

Air Permeability Test Report

524010-APT01-ZONE OR-00-01+02-170707-SBB – Version 00

7<sup>th</sup> July 2017



**RSK**

Page 1 of 10





## RSK GENERAL NOTES

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**Report No.:** 524010-APT01-Zone OR-00-01+02-170707-SBB (00)

**Title:** Zone OR-00-01+02, Royal Hospital for Sick Children, Edinburgh

**Client:** Multiplex Construction Europe Ltd

**Client Address:** RHSC Project Office  
Little France Crescent  
Edinburgh  
EH16 4TJ

**Report Date:** 7<sup>th</sup> July 2017

**Issuing Laboratory:** RSK Environment Ltd.  
Building Sciences Division  
Abbey Park, Coventry, CV34AQ

**Status:** FINAL

**Author**

[Redacted]  
Stuart B Bonard  
Director  
Building Sciences Division

**Technical  
reviewer**

[Redacted]  
[Redacted]  
Test Engineer

**Date:** 7<sup>th</sup> July 2017

**Date:** 7<sup>th</sup> July 2017

RSK Environment Ltd. (RSK) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purpose as stated in the agreement under which the work was completed. The report may not be relied upon by any other party without the express agreement of the client and RSK. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by RSK for inaccuracies in the data supplied by any other party. The conclusion and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

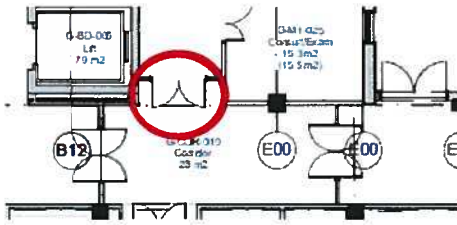
No part of this report may be copied or duplicated without the express permission of RSK and the party for whom it was prepared. The results contained within this report relate only to the items tested. The results stated in this report are only valid when the report is presented and read in full.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

The work has been undertaken in accordance with the quality management system of RSK Environment Ltd. Any opinions or interpretations included within this report are outside the scope of our UKAS accreditation.

# 1 TEST INFORMATION

## 1.1 Test Particulars

|   |  |
|---|--|
| <b>Building Name &amp; Address</b>                            | Zone OR-00-01+02, Royal Hospital for Sick Children, Little France Crescent, Edinburgh, EH16 4TJ  |
| <b>Test Date</b>  | 6 <sup>th</sup> July 2017  |
| <b>Test Time</b>  | 11:15  |
| <b>Test Engineer</b>  | Stuart B Borland   |
| <b>Building Description</b>                                   | New build children's hospital. Concrete framed with concrete floors and roof slab. Cement particle board on SFS framing to external walls clad with a mixture of brickwork, insulated render and rainscreen cladding. Aluminium framed curtain wall screens and external doors. Timber/aluminium composite punch windows. Hot melt roofing membrane. ETFE roofs over atrium spaces.<br>An extract plan identifying the extent of Zone OR-00-01+02 are attached in Section 6. |
| <b>Status of Openings</b>                                     | All doors and windows were latched closed  |
| <b>Ventilation Strategy</b>                                   | Full mechanical ventilation throughout.  |
| <b>Fixed Services Description (Heating/ Ventilation/ AC.)</b> | Full mechanical ventilation throughout providing integrated heating and cooling supplemented by ceiling mounted radiant panel heating.   |
| <b>Excluded Areas</b>   | None   |
| <b>Test Standard</b>  | ATTMA TS1  |
| <b>Test Equipment &amp; Setup</b>                             | 2 electric fans set up within ground floor access door to the main corridor.<br>   |
| <b>Internal Pressure Hose Location</b>                        | Central Main Waiting Area.   |

## Test References

BS EN 13829:2001 - *Thermal performance of buildings – Determination of air permeability of buildings – Fan pressurization method*

Air Tightness Testing and Measurement Association - *Technical Standard 1 (ATTMA TS1 (Issue 2 July 2007), Technical Standards L1 and L2 (Issue 1 Oct 2010)*

## 2 TEST RESULTS

### 2.1 Building Specific Parameters

| Unit Reference   | Target Air Permeability<br>( $\text{m}^3/(\text{h}\cdot\text{m}^2)$ @ 50Pa) | Calculated Envelope Area<br>( $\text{m}^2$ ) | Means of Envelope Calculation |
|------------------|---|--|-------------------------------|
| Zone OR-00-01+02 | 5   | 2,126.73                                     | Detailed Drawings             |

### 2.2 Results

(Refer to Section 4 for test data sheets and graphs)

|                                  |             |   |
|----------------------------------|-------------|---|
| <b>Measured Air Permeability</b> | <b>2.59</b> | <b><math>\text{m}^3/(\text{h}\cdot\text{m}^2)</math> @ 50Pa</b> |
| $n$ (air flow exponent)          | 0.592       |   |
| $C_{env}$ (air flow coefficient) | 0.151       | $\text{m}^3/\text{h}/\text{nPa}$                                |
| $C_L$ (air leakage coefficient)  | 0.151       | $\text{m}^3/\text{h}/\text{nPa}$                                |
| $r^2$ (correlation coefficient)  | 0.997       |   |

### 3 TEMPORARY SEALS AND NOTED DEVIATIONS

#### 3.1 Means of Ventilation Systems Closure

The table below describes the natural and mechanical ventilation systems/openings and the means by which they were closed and temporarily sealed during the test.

| Ventilation System            | Temporary Seals Installed |
|-------------------------------|---------------------------|
| Mechanical supply and extract | Polythene and tape        |

#### 3.2 Deviations from Test Method

Deviations from the approved test method are noted below. This report offers no interpretation of the stated measured air permeability in this regard and the final decision as to the validity of this test in demonstrating compliance with the relevant performance standards remains with others.

| Deviation | Description |
|-----------|-------------|
| None      | N/A         |

#### 3.3 Other Temporary Seals Used During Test

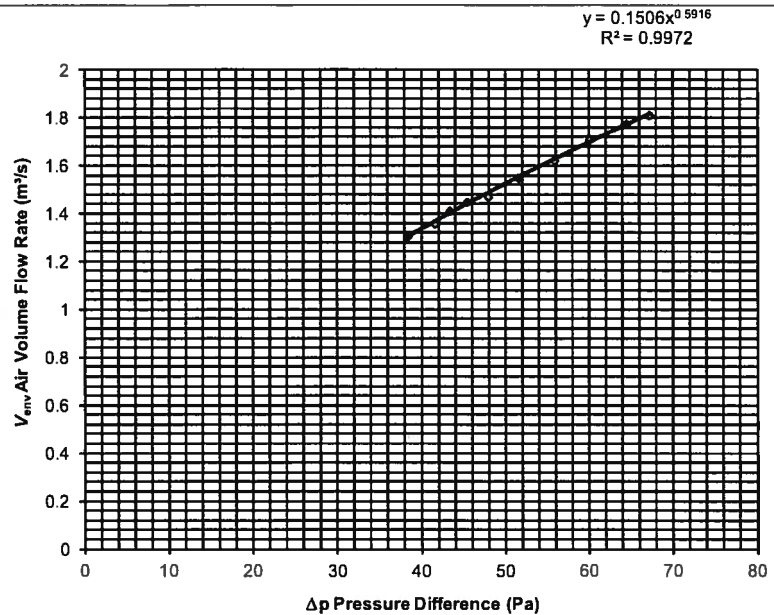
The table below lists temporary seals used during the testing of the building(s) which may be considered deviations from the test method in BS EN 13829:2001 and ATTMA Standard. These temporary seals must be remediated into permanent works, to be representative of the building in its final condition.

| Temporary Seal Location                                   | Method of Temporary Sealing |
|---|-----------------------------|
| Internal division doors between zone and rest of building | Tape seals                  |



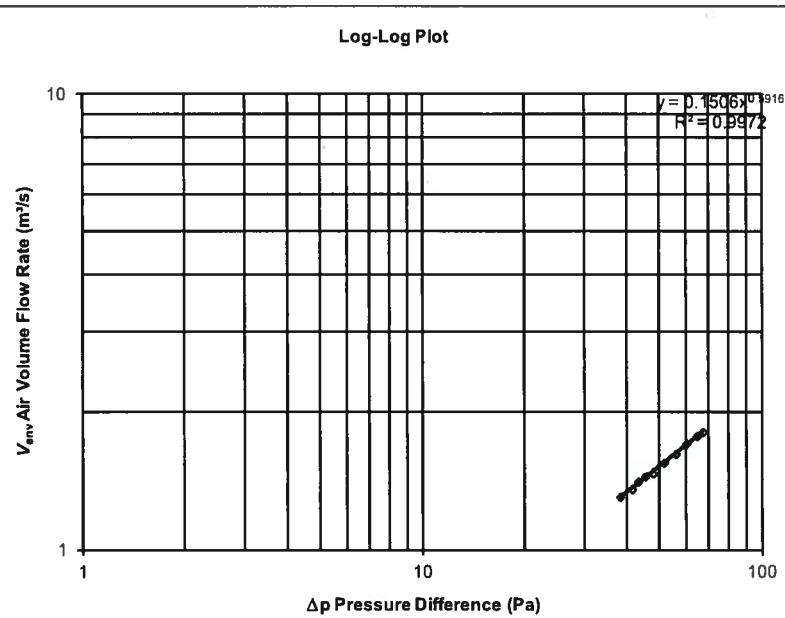


**Air Pressurisation Test**  
**524010, RHSC Zone OR-00-01+02**  
**06/07/2017**



BS-Pressure Test Graph Issue 22 20/10/2016

**Air Pressurisation Test**  
**524010, RHSC Zone OR-00-01+02**  
**06/07/2017**



BS-Log-Log Plot Issue 22 20/10/2016

## 5 DEFINITIONS

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### Air leakage test standard

ATTMA Documents TSL1, TSL2 and TS1 - testing buildings for air leakage – provides the methodology for pressure testing of all buildings. This has been adopted as the test standard for Part L of the Building Regulations (England and Wales), Section 6 of the Building (Scotland) Regulations and Part F of the Building Regulations (Northern Ireland).

To compare the envelope leakage characteristics between buildings of different shapes and sizes, air permeability Q50/ST is used. Q50 is the air volume flow rate (m<sup>3</sup>/h) through the building envelope at a pressure differential of 50Pa and ST is the total external surface area (m<sup>2</sup>). The result is expressed in terms of m<sup>3</sup> leakage per hour per m<sup>2</sup> of envelope area.

### Air permeability definition

ATTMA TS1, and TSL1 and TSL2 define air permeability 'envelope area' as follows:

*'For an Air Permeability envelope area (AE), all walls (including basement walls, if the basement is subject to test), roof and the footprint are considered as part of the building envelope'*

### Fan pressurisation system

Fan pressurisation systems are used to quantify the air leakage of the envelope of all buildings. The leakiness of the envelope is quantified by connecting a single large fan or a series of fans into an external doorway and pressurising the building whilst measuring the airflow rate required to maintain a pressure difference across the building envelope. The leakier the building, the more air is needed to maintain the required pressure differential. The fan systems selected will be dictated by the size of the building, and the specification to be verified. It should be noted that fan capacity must be provided to achieve the test pressure (50Pa) at or below the specified air permeability.

Fan systems will vary from individual electrically operated fans, up to multiple petrol driven trailer mounted fans for larger buildings.

### Test procedure

The test was carried out in accordance with RSK Environment Ltd. Standard Method Statement and test procedures. This is fully compliant with ATTMA TSL1, TSL2 and TS1 and older reference CIBSE TM 23.

The test procedure is also in accordance with BS EN 13829:2001 - Thermal performance of buildings – Determination of air permeability of buildings – Fan pressurization method (Method B – test of the building envelope).

The mean internal and external temperatures were measured and recorded during the tests. The temperature values recorded were used to standardise the airflow rate through the fan systems to agreed conditions.

Corrections were also made for 'static pressure'- this is the natural pressure difference that may exist between inside and out due to environmental conditions. Measured with all external doors and windows closed both before and after the test, had this been in excess of +/- 5Pa then the test would not have been fully compliant with the test standards.

Problems may also arise if internal/external temperature differences are excessive, particularly in high-rise buildings where 'stack effects' can induce sizeable pressure differences within the building. For a satisfactory test, it is recommended that the product of the inside/outside temperature difference (K) and the height of the building (m) should not exceed 250mK. This criterion was satisfied during this test procedure.

A further parameter measured was wind speed. These were recorded as below the recommended level at which the pressure test should be carried out (6m/s), and are therefore acceptable.

The test procedure consisted of pressurising the building then taking a set of measurements of the building pressure differential and flow rate through the fans. The fan speeds were then reduced in several steps and the readings repeated at each of the speed settings.

All external doors were kept closed during the test; internal doors were opened to allow pressure to equalise throughout the building enclosure.

## Data analysis

Air volume flow rate  $Q$  (m<sup>3</sup>/s) through the fans is measured by calibrated flow grids over a suitable range of building pressure differentials  $\Delta P$  (Pa). These are then corrected for internal/external temperature difference, in accordance with ATTMA TS1, TSL1/L2. A best-fit power-law profile of the form  $Q = C_{env} (\Delta P)^n$  is fitted to the data where both the air flow coefficient  $C_{env}$  and exponent  $n$  are constants.

$C_{env}$  is then corrected for the measured barometric pressure to a specified test pressure of 50Pa, to provide the air leakage coefficient  $CL$ .

The theoretical leakage rate at 50Pa is then calculated from the formula:

$$Q_{50} = CL(\Delta P)^n$$

This leakage rate is then divided by the calculated envelope area to provide a rate of leakage in m<sup>3</sup> per hour per m<sup>2</sup> of envelope area at a pressure differential of 50Pa.





# Registered Certificate Of Air Permeability Test



## Test Credentials

|                         |  |
|-------------------------|--|
| Test Provider:          | RSK Building Sciences                      |
| Address:                | Abbey Park, Humber Road, Coventry, CV3 4AQ |
| Test Engineer:          |  |
| Qualification:          | Level 2                                    |
| Tester Registration No: | 1123                                       |
| Unique Certificate No:  | 10259438                                   |

## Building and Test Details

|                                   |  |
|-----------------------------------|--|
| Building or Plot No:              | Zone OR-00-01+02   |
| Tested Building Address:          | Royal Hospital for Sick Children, Little France Crescent, Edinburgh, EH16<br>4TJ |
| Footprint (GFA, m <sup>2</sup> ): |  |
| Envelope Area (m <sup>2</sup> ):  | 2126.73  |
| Date of Test:                     | 2017-07-06   |

### Temporary sealing:

### Deviations:

## Test Data and Result

This is to certify that the above named dwelling/building has been tested for air permeability by a registered provider in accordance with ATTMA {ATTMA TSL2 (Method B)}, subject to the above statements regarding temporary sealing and 'test deviations'.  
This certificate is a short form report. If a full compliant report is required, please contact the testing company. Enquiries about this certificate should be made to Scheme Manager ATTMA, St Mary's Court, The Broadway, Amersham, HP7 0UT or visit [www.attma.org](http://www.attma.org)

The key Leakage characteristics of the building are:

|   |   |
|---|---|
| Result (AP <sub>50</sub> ):                                       | 2.59 m <sup>3</sup> .h <sup>-1</sup> .m <sup>-2</sup> @ 50 Pa |
| The result achieved meets the Design Air Permeability requirement |   |

|  |   |  |  |
|--|---|--|--|
| Design air permeability:                 | 5.00 m <sup>3</sup> .h <sup>-1</sup> .m <sup>-2</sup> @ 50 Pa | Flow Exponent, n:                        | 0.592                                    |
| Correlation of results, r <sup>2</sup> : | 0.997   | Air flow coefficient, C <sub>env</sub> : | 0.151 m <sup>3</sup> .h <sup>-1</sup> Pa |

## Air Permeability Testing

| Build Zone  | Report Date | Result | Report No   | Unique Certificate No | Comments                |
|-------------|-------------|--------|---|-----------------------|-------------------------|
| OR-00-01+02 | 10/07/2017  | Pass   | 524010-APT01-ZONE OR-00-01+02-170707-SBB – Version 00 | 10259434              | 2.59 m³.h⁻¹.m⁻² @ 50 Pa |
| Zone A      | 15/08/2017  | Pass   | 524010-APT01-ZONE A-170517-SBB – Version 00           | 10232987              | 4.82 m³.h⁻¹.m⁻² @ 50 Pa |
| G-00-04     | 04/09/2017  | Pass   | 524010-APT01-ZONE GR-00-04-170904-SBB – Version 00    | 10282570              | 4.88 m³.h⁻¹.m⁻² @ 50 Pa |
| G-01-02+03  | 28/08/2017  | Pass   | 524010-APT01-ZONE GR-01-02+03-170828-SBB – Version 00 | 10280209              | 4.90 m³.h⁻¹.m⁻² @ 50 Pa |
| G-02-03     | 28/08/2017  | Pass   | 524010-APT01-ZONE GR-02-03-170828-SBB – Version 00    | 10280212R             | 3.32 m³.h⁻¹.m⁻² @ 50 Pa |
| OR-03-01+03 | 06/09/2017  | Pass   | 524010-APT01-ZONE OR-03-01+03-170906-SBB – Version 00 | 10284258              | 3.77 m³.h⁻¹.m⁻² @ 50 Pa |
| OR-01-01+02 | 14/08/2017  | Pass   | 524010-APT01-ZONE OR-01-01+02-170814-SBB – Version 00 | 10259438              | 2.59 m³.h⁻¹.m⁻² @ 50 Pa |
|             |             |        |   |                       |                         |
|             |             |        |   |                       |                         |
|             |             |        |   |                       |                         |
|             |             |        |   |                       |                         |
|             |             |        |   |                       |                         |

## Appendix 2

**SBAR Report – UPDATE to the Report sent 17.02.17**

**National Interventional Neuroradiology Service:**

**Additional risk to service provision – relocation of the Lothian neurosurgical service in 2018**



16 August 2017

### Situation

The Managed Service Network for Neurosurgery (MSN) is concerned that the ongoing staffing issues in the Interventional Neuroradiology (INR) service within NHS GG&C will be further compounded by a temporary cessation of service in NHS Lothian (NHSL) at the time of relocation of the neuroscience service to Little France. Disruption is expected for a five week period in February/March 2018.

The MSN is concerned that the INR service in GG&C currently lacks the resilience to provide for its regional population. This has resulted in additional transfers to NHSL for endovascular treatment as well as a perceived lowered threshold for suggesting surgical treatment for aneurysms. It is the view of the MSN that GG&C is therefore unlikely to be in a position to provide a national INR service for a five week period.

This represents an *acute on chronic* risk that requires immediate mitigation. Service disruption in NHSL has national implications. A plan to accommodate the national neuro-interventional caseload is required.

### Background

The INR service provides the time-critical treatment of neurosurgical patients who present with subarachnoid haemorrhage where coiling rather than clipping of an aneurysm is indicated. The service also provides embolisation procedures that are adjunctive to neurosurgical procedures. The national service performs just under 500 procedures each year.

#### *Acute Risk:*

The relocation of the INR service in NHSL requires the transfer/installation of equipment that will result in a five week down-time of the service in February/March 2018. NHSL are contingency planning for this service disruption and one of the options under consideration is that GG&C provide the national interventional service for all of Scotland for the period of downtime.

#### *Chronic Risk:*

The staffing issues in the INR service within GG&C have been ongoing for over two years. GG&C reported in February that the neurointerventional service would be based in, and managed by, the Directorate of Regional Services. This transition has not taken place and it is unlikely to do so until the underlying staffing issues that impact on recruitment are addressed.

The recruitment issues within GG&C were first reported to the CMO on August 28<sup>th</sup> 2015 and continue to constitute a significant risk to national service provision. There are three substantive posts in GG&C: one substantive post is filled. Two of the three locums who were on 12 month contracts when we reported in February 2017 have left the unit.

Staffing in the unit in NHSL is stable; a third consultant will start in October 2017.

### Assessment

The MSN considers the national risk to the continuity and availability of neurosurgical care will increase substantially (from an already high level) in February/March 2018 for a 5 week period when the INR service in NHSL is temporarily unavailable.

The national service remains precarious until the underlying staffing issues that have a detrimental effect on recruitment and retention in GG&C are addressed.



## **Recommendations**

NHS Lothian should:

- Make appropriate arrangements for patients during the planned service downtime that are not dependent on an under-staffed INR service in GG&C.

NHS GG&C should:

- Confirm if the service in GG&C can or cannot cope with the national workload for a five week period.
- Work to address the ongoing issues including the option of a combined governance process and national MDT with colleagues in Lothian to mitigate concerns about case selection and subsequent decision making.
- Address the underlying staffing issues that impact on successful recruitment.
- Continue to provide locum cover for the service until such times as the substantive posts are filled.

The MSN will:

- Meet with the Medical Director and Chief Operating Officer of GG&C.
- Request that work begin on a contingency plan option of sending patients to NHS England.

██████████  
National Network Manager  
Managed Service Network for Neurosurgery

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